



RMEF

The Exclusive Newsletter for RMEF Habitat Council

VOLUME 3 // ISSUE 4



(800) CALL-ELK ■ legacy@rmeff.org

UPCOMING EVENTS

NATIONAL ACTIVITIES

Summer Habitat Council Meeting & Retreat

April 30-May 2, 2020
Asheville, NC

Visit western North Carolina's Blue Ridge Mountains. Personally experience one of North America's greatest wildlife recovery stories with the restoration of elk to their historic range. As these herds grow, enhancing their habitat and protecting vital lands help them thrive for wildlife watchers and hunters alike.

Registration will be required.

*Be watching for your personal invitation!

Elk Camp & MTN Fest

July 23-26, 2020
Park City, UT

Registration will be required.

Habitat Council Business Meeting

July 23, 2020
Park City, UT

Registration will be required.

For more information, please call
1-800-CALL-ELK.

NEWSLETTER *of the* **HABITAT COUNCIL**

HABITAT COUNCIL A Message from your co-chairs



Kent & Cyndie Johnson, RMEF
Habitat Council Co-chairs.

By the time you receive this newsletter, the eggnog will be all gone, the gifts will all be opened, and leftovers will be a distant memory. We hope you all had a wonderful holiday season and look forward to the upcoming year.

After the hustle and bustle of the holidays, it is wonderful to reflect on the past year of RMEF milestones. RMEF celebrated its' 35th anniversary of habitat stewardship, land protection and elk restoration. Membership hit a record high, RMEF completed its' 12,000th conservation project, and projects like Falls Creek (Montana) showed how HC members rise to the challenge to get projects funded that have a major impact on elk and elk country for now and future generations.

We are excited to know we will be holding two HC meetings next year. The dates for our Summer HC Meeting and Retreat are now confirmed for April 30-May 2, 2020 in Asheville, North Carolina. We will have an opportunity to visit sites where elk have been

restored to their historic ranges. It will be a great time for our HC members to reconnect with one another. We will be able to network with members of the RMEF Board of Directors as well as the executive staff. We will hear updates on current projects as well as the State of RMEF. This is your time to ask questions and directly provide input.

We will also be holding a meeting during Elk Camp. That will be a time for all of us to come together not only as HC members, but also with our entire RMEF family.

There are so many ways we can help RMEF. We would like to thank all of you who have hosted an event in the past or are planning an upcoming event. This is an opportunity to share your love and passion for the mission of RMEF with your friends and family by raising funds for critical projects.

Thank you so much for the gifts of your time, talents, leadership and donations. Together in conservation, we are making a difference for elk and elk country!

YOUR INVESTMENTS AT WORK On the Ground for Elk and Elk Country

SCIENCE CORNER A Teaching Resource

FOREST INSECTS AND DISEASES

There are millions of insects in forested habitats in elk country. Almost all of them are native insects representing a variety of Classes, Orders, Families, Genus and Species under the phylum Arthropoda. Most of them bring positive ecosystem benefits to the forest and help provide for the wildlife diversity found there. Insects are primary pollinators for many plants that humans rely on for food; both insects and diseases are the initial decomposers of organic matter that is essential for sanitary conditions and nutrient cycling; and insects and diseases are a critical food source for animals, such as birds. A few of these insects, such as Mountain Pine Beetle (MPB) and Western

Continued page 2

NEWSLETTER of the HABITAT COUNCIL

Science Corner continued

Spruce Budworm are beneficial to forests when they are at low numbers. However, these same insects and diseases can also cause epidemic outbreaks and forest loss and can be detrimental when their populations increase appreciably.

A report by the USDA showed that in 2009 the tree mortality caused by insects and diseases was reported on 11.8 million acres. Thirty five percent of that mortality was caused by mountain pine beetle. By 2013, the mortality caused by insects and diseases was reported on nearly 4.5 million acres nationwide largely due to the large drop-off of mountain pine beetles. The recent outbreak (1996 – 2013) was 10 times larger than previous outbreaks. All 19 western states and Canada were impacted by MPB destroying approximately 88 million acres of timber at a 70 – 90% kill rate.

Several factors contributed to the larger impact observed in the more recent MPB outbreak. Many western forests have two to three times more trees on the landscape due to lack of disturbance, compared to historic forests. Much of that came from the national direction to suppress wildfires, a result which came about from the 1910 Big Burn in western Montana and northern Idaho. Western forests adapted to natural fires (lightning strikes) and man-caused fires of a large scale

(Native American burning for habitat improvement and fires from railroads and other industries). More fuel in the forest sets up conditions vulnerable to a variety of ignition sources. The long-term drought in the west during this recent outbreak also contributed greatly to this situation. Healthy trees are resilient to a lot of challenges but drought stressed, older trees and timber stands with homogeneous aged trees are not as robust in warding off insects or diseases.

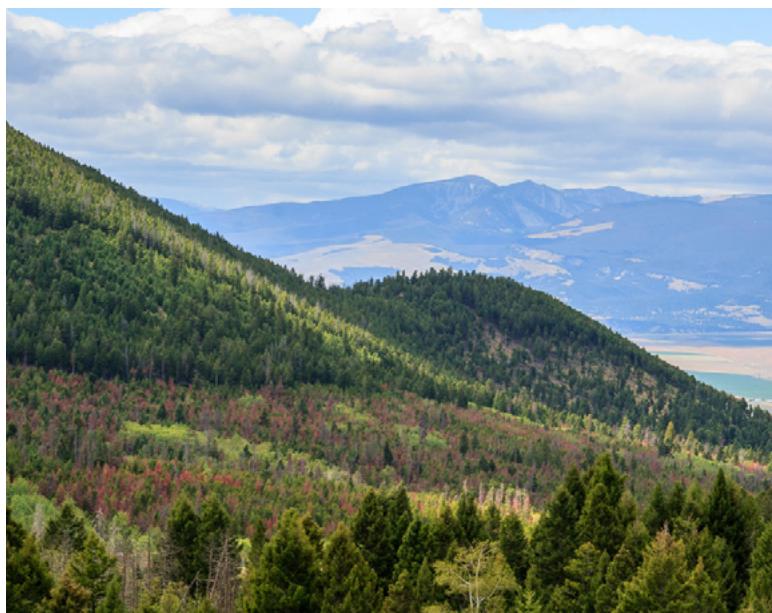
Once the beetle has bored into the tree successfully it is past any possible treatment. Since the MPB lives under the bark there is no practical way to treat trees for the adults or the larvae. There are some insecticides that can be used on individual trees in your yard to protect them (carbaryl, permethrins and esfenvalerate), but it is not practical

to use at a timber stand or forest level. Each of these insecticides has side effects in that most are highly toxic to bees, stoneflies and some fish.

So how do we prepare for the next outbreak? Our forests need to be managed for resiliency! We may not be able to do anything about drought, but we may be able to provide active management to help thin out the forests. Fewer trees on the landscape will provide more diversity on the forest floor with grasses, forbs and shrubs. This change would greatly improve foraging for elk and other ungulates, but also provide nesting habitat cover and foraging areas for a wide variety of birds, small mammals, reptiles and amphibians. Fewer trees may also help soil nutrient cycles and water management. Many worry that fewer trees would mean the

forests would lose their carbon sink capabilities, but grasses, forbs and shrubs also provide carbon sinks. New trees that grow after disturbance, i.e. prescribed fire or forest thinning also take up carbon and recent research indicates they take up carbon at a higher rate than older trees. Through your donations, RMEF continues to support active forest management to ensure forest health with resiliency to diseases by insects and diseases.

—Tom Toman
Director of Private Lands Stewardship



ELK BY STATE Elk Population

MICHIGAN

State	Subspecies	1975	1980	1985	1990	1995	2000	2005	2010	2015
MI Elk Population	Rocky Mountain	200	500	950	980	1,200	1,000	900	750	1,100
MI Elk Hunters	Rocky Mountain				120	230	316		146	262
MI Elk Harvested	Rocky Mountain				119	204	256		110	193

Habitat Council Members: 12
RMEF Members: 6,178



OTHER WILDLIFE Mountain Pine Beetle

Nearly everyone has heard about Mountain Pine Beetles (MPB) and their impact on forests in the western U.S. But most are not aware that this beetle is a native of North America. There are 17 native species of bark beetles that are known to occur, but the prevalent one in the Rockies is the mountain pine beetle, *Dendroctonus ponderosae*. An adult MPB is about the size of a grain of white rice. The MPB completes its life cycle under the bark except when adults emerge and fly to attack new trees. That flight generally occurs in July or August of each year. Females seek out large diameter, living, green trees that they attack by tunneling under the bark. In outbreak situations smaller diameter trees may also be infested. They generally attack ponderosa, lodgepole, Scotch pine, and limber pine and also attack bristlecone and pinyon pine less commonly. If the attack does not involve very many beetles, healthy pine trees form pitch tubes to push the beetles out. Trees that are not growing vigorously due to old age, crowding, poor growing conditions, drought, fire or mechanical damage, root disease and other causes are likely to be attacked.



If the beetle mates are successful in getting under the bark they form a vertical egg gallery under the bark and produce about 75 eggs. After egg hatch, larvae (grubs) tunnel away from the egg gallery and spend the winter under the bark. They are able to survive the winter by metabolizing an alcohol called glycerol that acts like an antifreeze. In the past, colder winters controlled MPB survival but it takes -30° F temperature for five or more days to affect MPB larvae. In the spring, they continue to

feed on the phloem constructing galleries that extend at right angles to the egg galleries and transform into pupae in June or July. Adults feed under the bark before they emerge. One or more beetles will then make an exit hole from which several adults will emerge. Emergence of new adults can begin in mid-June, but the majority of beetles exit trees in late July (lodgepole pine) through mid-August (ponderosa pine). An important part of the life cycle is the tendency of MPB to transmit bluestain fungi. Spores of these fungi contaminate the bodies of adult beetles and are introduced into the tree during attack. Fungi grow within the tree and assist the beetle in killing the tree. The fungi give a blue-gray appearance to the sapwood. As the fungi develop and spread throughout the sapwood, they interrupt the flow of water to the crown of the tree. The fungi also reduce the tree's flow of pitch, aiding the beetles in overcoming the tree. The bluestain wood is often seen as undesirable, but the structure of the wood is not compromised. In some places, craftsmen use bluestain wood for furniture and decorations.

—Tom Toman

RESEARCH HIGHLIGHT Elk Response in Beetle Killed Forests

Millions of acres of western forests were killed by mountain pine beetles in the latest outbreak that lasted from 1996 through 2013. Many biologists and elk hunters alike wondered what effects the changes to forest canopy and understory structure would have on elk. Many thought the loss of canopy cover would provide more sunlight to the forest floor and would enhance grasses, forbs and shrubs which would benefit elk and other wildlife. To answer that question, the University of Wyoming and Wyoming Game and Fish Dept. proposed a research project in south-central Wyoming and asked the RMEF WY Project Advisory Council (PAC) to help with funding. One of the findings was that during the summer female elk avoided beetle-killed forest during nearly all parts of the day. With the loss of canopy cover, there was an increase in grass biomass; however it was difficult to access due to the downed logs. The increase in forage abundance was not sufficient to offset the difficult travel through and loss of thermoregulation in beetle-killed forests. The beetle epidemic altered elk habitat use and resulted in the potential loss of forest habitat that elk use

during the day. This study also showed elk preferred to use areas that had greater distances from motorized routes. We will cover that aspect in the next issue.

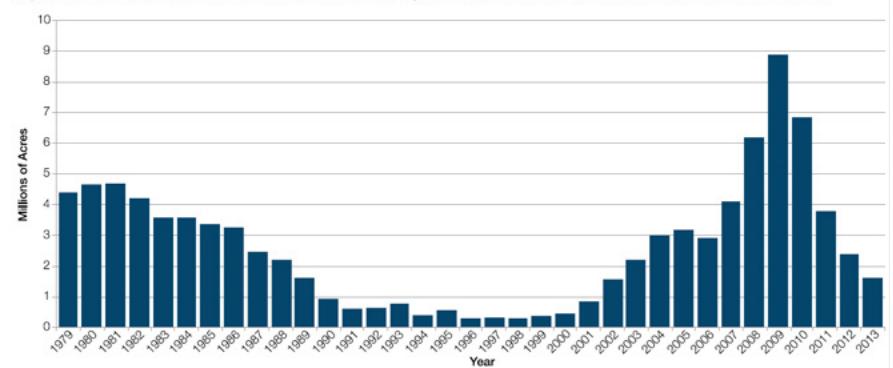
A year later, a similar research study was proposed for the Elkhorn Mountains of west-central Montana. This study was proposed by Montana Fish, Wildlife and Parks, Lewis and Clark National Forest, Elkhorn Working Group and Montana State University and received funding from the MT PAC. There was an average reduction in elk use of MPB-affected areas of 11% for both

sexes and all seasons. Private lands also played an important role in this study.

Both studies suggested that habitat enhancement projects using prescribed burns and forest thinning may be used to improve elk use of the forage in the MPB-affected areas. It will be interesting to monitor future elk use of beetle-kill areas as the habitat continues to change. As a result of your donations, RMEF is standing by for PAC project proposals to help implement these suggestions.

—Tom Toman

Figure 1. Mountain pine beetle activity decreased significantly in 2013 in much of the Western United States.





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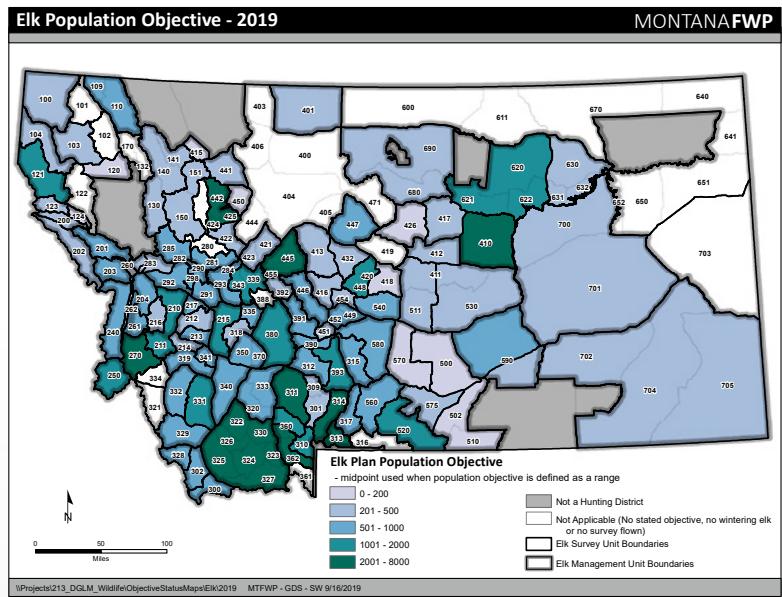
THE HERD WORD Knowledge of All Things Wapiti

EMUs, HMUs and DAUs vs. Hunt Areas

Elk management can be a very complicated process that needs to address a variety of concerns while still ensuring healthy elk populations. Many states use different terms to address elk management. They use a geographic area that represents the year-round and seasonal ranges. Some states like Montana call these units Elk Management Units (EMUs), Colorado calls them Data Analysis Units (DAUs), Utah calls them Elk Herd Units (EHUs) and New Mexico calls them Game Management Units (GMUs) while my home state of Wyoming calls them Herd Units (HUs). Generally, the herd is identified as having no more than 10% interchange with adjacent herd units during the year. Herd unit plans are derived from wildlife surveys and data interpretation that generate population estimates. This process helps determine the population objective and often includes objectives to maintain a ratio of bulls to cows. The first consideration is the health of the herd and the amount of habitat available. Several other considerations are which habitats are used, season of use and range conditions over several years. This can help determine a biological carrying capacity of the native habitats. Other considerations are how much time the elk spend on private property and whether or not they are depredating agricultural crops and the landowner's attitude toward the number of elk on their property. This is the social carrying capacity.

Herd Units can be one hunt area or many hunt areas. Hunt areas are the tool elk managers use to manage people – to distribute hunters and hunting pressure to achieve harvest goals and meet their herd unit population and sex ratio objectives. Most hunters relate more to the hunt area name or number than the herd unit designation, but it is important not to confuse the two.

–Tom Toman



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