Seth Bodnar
President

UNIVERSITY OF MONTANA

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FY 2020 Federal Initiatives

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Continuing Projects of National Importance

Agriculture and Related Agencies
- McIntire Stennis Cooperative Forest Research Program -- $41 million

Interior
- Forest Service/Joint Fire Science Research Program -- $6.914 million (same as FY 16 enacted)
- Cooperative Wildlife Research Unit (CWRU) -- $23.9 million

Established Program to Stimulate Competitive Research (EPSCoR)
- NSF EPSCoR under CJS Appropriations -- $190 million
- NIH Institutional Development Award (IDeA) under LHHS Appropriations – $400 million
- DoD EPSCoR under Defense Appropriations -- $25 million

Mass-Timber Tall Wood Living Building

National Need

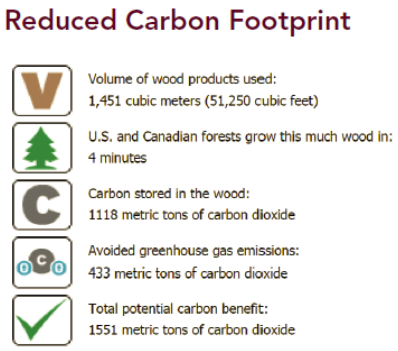
Increasing temperatures and decreasing rainfall conditions cause drought and dry conditions that, along with a shift in forest management strategies on federal lands, has greatly increased the risk of catastrophic wildfires across the Northwest. This puts homes and livelihoods at risk and puts more carbon back into the atmosphere, perpetuating a vicious cycle. Meanwhile, small towns are struggling with the decline of traditional industries like forest products, resulting in a steady shift of populations from rural to urban centers.

SmartLam Cross Laminated Timber Panels

The 2018 Farm Bill expanded the definition of Innovative wood products eligible for funding under the wood innovation grant program. The farm bill also encouraged research on tall wood buildings that use mass timber. Additional funding is need to expand the number of grants that can be made in this important area such that the U.S. forest products industry can keep pace with global competitors seeking to dominate this new market for wood building products.

Addressing the Need

In Montana, these two glaring problems overlap and the solution may as well. Working together, individuals from the University, industry, and the environmental sectors can increase forest health, create jobs in rural communities, and create beautiful, smart structures that store carbon. As the oldest academic forestry program in the west, the Franke College at the University of Montana can serve as a leader in creating a bright future by building a new forestry facility that showcases progressive research and education in natural resource sciences, innovative strategies for sustainable forest management, a resilient and integrated forest industry, and a new path forward in green building design.



This new building – framed and built with cross-laminated timber (CLT) – will demonstrate one path to sustainability: harvesting our nation's forests in a strategic way that promotes forest health, sequesters carbon and provides an inexpensive, renewable resource for construction. CLT is an engineered wood panel that is redefining the building industry. Developed in Europe over 20 years ago, CLT is now in demand across North America as a lighter, low-carbon, renewable and sustainable building material. The product rivals the strength and durability of steel and concrete.

FY 2020 Request – $2.0 Million

Project Title: Mass Timber Tall Building Technology
Appropriation Bill: Agriculture
Account: Agriculture Research Service
Requested Amount: $2 million increase to President's Budget Request
Language: Report

"Value Added Wood Products – The Committee provides $2,000,000 to support Mass-Timber research and demonstration projects, with an emphasis on cross laminated timber technology and tall wood buildings."

Economic Impact in Montana

This initiative would benefit the emerging mass-timber industry in Montana, as well as the wood industry supply chain from logging to transport of construction materials. Columbia Falls, Montana was chosen in 2012 as the site for the first cross laminated timber manufacturing facility in the U.S. The SmartLam Technologies Group recently announced plans to expand production from 20,000 cubic meters to more than 80,000 cubic meters, and add 75 new employees by the end of 2019. Demand for mass-timber products is growing in the U.S., and construction of tall wood buildings will increase demand and open new markets.

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Defense Critical Language and Culture

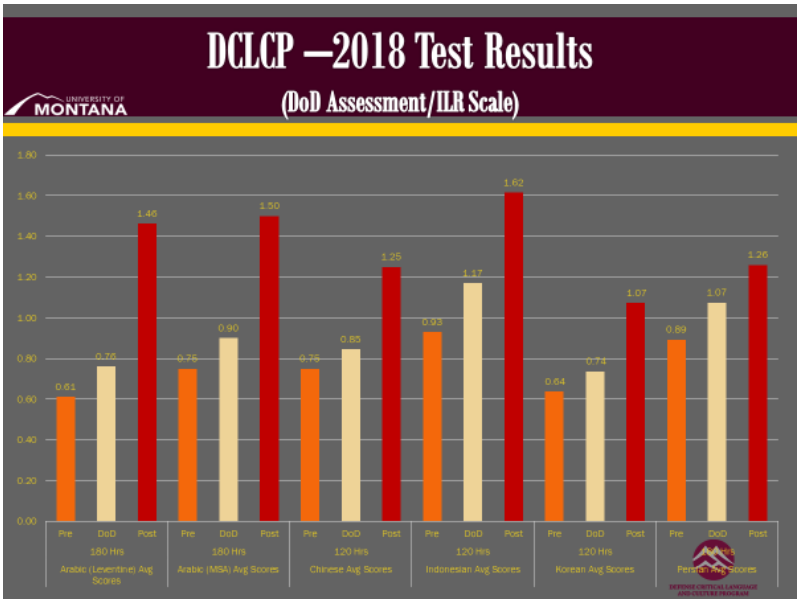
The University of Montana's Defense Critical Language and Culture Program (DCLCP) provides intensive language and culture training for active and reserve component military personnel and intelligence community members, and its primary customers are Special Operations Forces, Intelligence Agencies, and the National Guard. As a Language Training Center (LTC), DCLCP is funded through a contract with the Defense Language and National Security Education Office (DLNSEO). Current training includes on-site (University of Montana) and synchronous on-line language courses in Arabic (Modern Standard Arabic and Levantine dialect), Chinese, Dari, Indonesian, Korean, French, Persian and Pashto; as well as culture courses about the Middle East and East/Central Asia.

The FY19 DoD Appropriations bill provided a $6 million increase for "defense critical language and culture program," and the associated Senate report included the following language:

> *Defense Language and National Security Education Office*.—The Committee recognizes that, in partnership with universities across the country, the Defense Language and National Security Education Office provides critical college accredited training for servicemembers and government officials in a number of languages and strategic cultures. The Committee encourages the Department of Defense to continue placing a high priority on these programs and designates the funding included in the fiscal year 2019 President's budget request for the Language Training Centers as a congressional special interest item to ensure warfighters, both conventional and special operations forces, receive the language and culture training needed to complete their missions effectively.

Furthermore, in Section 1263 of the National Defense Authorization Act for FY19, the Congress recognized the importance of critical foreign language and cultural expertise, directing the Secretary of Defense to evaluate the operational requirements for such skills and report back with a plan to address any shortfalls in these areas.

Benefits of the Program



DCLCP courses are designed to enable students to learn languages and understand cultures of strategically significant nations at a time when bilateral and multilateral relations are increasingly complex. DCLCP provides students with language fluency and cultural awareness, essential elements of Counter-Insurgency Warfare, allowing them to conduct effective interaction in a variety of settings with heritage populations through language classes ranging from basic to advance. Each class is presented by language and culture professors and is an accredited college course from the University of Montana. DCLCP is committed to adapting the content, length, location and timing of instruction and courses offered to fit the needs of military units and US government agencies. Department of Defense test results demonstrate DCLCP students'

end of course fluency rates are among the best in the nation—fully 38% better than the DoD language fluency standard.

DCLCP has leveraged the academic capabilities of The UM and fully integrated our program to afford our DoD students the optimal academic experience that fortifies them with a deep cultural and area studies understanding of their region and its peoples as well as language fluency consistent with their diverse needs. Their accomplishments are validated with transferable college credit as well as the opportunity to combine their UM credits with those earned elsewhere and thereby earn a college degree.

FY20 Request

The University of Montana requests continued support from the Montana delegation to fully integrate the DCLCP into DoD language training activities, and to ensure that the quality of the training is considered in addition to price when DoD contracts for language and culture training services. To that end, and as a means to better prepare and reward our military members with earned college credit, the University requests Congressional language that encourages DoD and the service components, to include Special Operations Forces, to use accredited academic institutions as the preferred method of providing language and cultural training. The faster proficiency-based turn time associated with civilian educational institutions will also yield DoD significant manpower dollar savings associated with the reduced time need to attain requisite fluency.

FY 2020 Request - $15 million in Total Program Funding

Project Title:	Language Training Centers
Appropriation Bill:	Department of Defense
Service/Agency:	Office of Secretary of Defense
Account:	Operations and Maintenance, Defense Wide
Line #:	Line #220, Budget Activity 4
Line Title:	Defense Human Resources Activity; Defense Language and National Security Education Office (DLNSEO)
Requested Amount:	$15 million in Total Program Funding
Language:	Report

Language Training Centers.—The Committee recognizes that, in partnership with universities across the country, the Defense Language and National Security Education Office provides training for service members and government officials in a number of languages and strategic cultures. The Committee encourages the Department of Defense to continue placing a high priority on these programs, with an emphasis on quality of instruction and a preference for programs that provide college credit, and designates the funding included in the fiscal year 2020 President's budget request for the Language Training Centers as a congressional special interest item. To ensure warfighters, both conventional and special operations forces, receive the language and culture training needed to complete their missions effectively, the Committee recommends $15,000,000 for Language Training Centers.

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Advanced Warfighter Physiology and Operational Readiness Program

Problem to be Studied

Air Force Special Operations and other military personnel frequently operate under highly stressful conditions in the field for extended periods of time. Human performance is a key factor in mission success and the mitigation of fatigue and cognitive errors, nutritional strain, and disorientation and confusion is particularly important. Current attempts to predict and measure operational human performance and mitigate injury are cost prohibitive, inaccurate, and unable to aid in decision making. Sensor technologies are constantly being developed to address this problem, but the incorporation of scientifically-backed software within the technology is inadequate.

The Montana Center for Work Physiology and Exercise Metabolism (WPEM) is working with Air Force Special Operations Command (AFSOC) to develop and refine physiological algorithms that will provide measures of real-time human performance and operational readiness when accompanied with current and future sensor technologies. As part of the Trump Administration's focus on warfighter readiness, additional funding is needed in the following areas.

- Further develop and refine predictive algorithms using physiological and environmental measures by conducting field and laboratory studies with existing sensors.
- Collaborate with USAF to test algorithms' ability to predict performance and reduce injury within the US military.
- Partner with US Forest Service and DoD to implement predictive algorithms to improve performance and reduce injuries.

Organizational Capabilities

WPEM is a research center on the University of Montana campus (Missoula), boasting two mobile laboratory setups, and a 3,550 square foot high-tech, state of the art facility, including an environmental chamber that can simulate nearly any location on earth. Since inception in 2007, WPEM has successfully conducted several studies for the DoD resulting in nearly $10 million in funding. We have published over 50 peer-reviewed publications, and established working relationships with; US Air Force, US Army, US Navy, US Special Operations Command and the US Forest Service.

WPEM's recent work with the Air Force, Army, Office of Naval Research, and USSOCOM has led to the early development of predictive algorithms that will allow us to forecast physiological stress and identify individuals at risk for heat and/or cold related injury or reduced performance. The cooperative agreements in place across DOD and ongoing work with AFSOC enable WPEM to serve the U.S. military and other agencies to better understand the physiological demands during training and operational stress in every environment.

The University of Montana requests a $5 million general increase to Air Force RDT&E Line #6 to continue and expand on work started with a $1.7 million appropriations in FY 19. The University will develop and refine physiological algorithms that will provide measures of real-time human performance and operational readiness when accompanied with current and future sensor technologies.

FY 2020 Request - $5 million

Project Title: Advanced Warfighter Physiology and Operational Readiness Program
Appropriation Bill: Department of Defense
Service/Agency: Air Force
Account: Air Force RDT&E
Line Title: Human Effectiveness Applied Research
Line # and PE: Line #6; PE 0602202F
Requested Amount: $5 million increase to President's Budget Request
Language: Report

"The Committee recognizes that physiological performance is a key factor in warfighter mission readiness. The Committee supports the Air Force's efforts to develop and deploy wearable and other sensor technologies to monitor the physiological condition of warfighters, but notes a capability gap to predict operational human performance and aid in decision making. A $5 million general increase is provided to develop and refine physiological algorithms that will provide measures of real-time human performance and operational readiness when accompanied with current and future sensor technologies."

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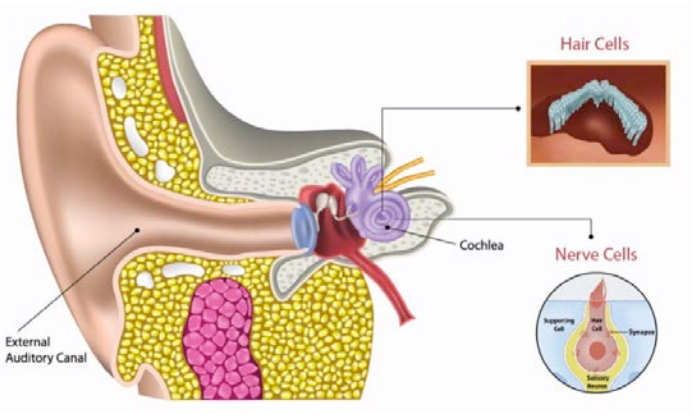
New Engineered Systems to Prevent Hearing Loss in Sailors and Marines

U.S. Navy Requirement

There is a growing prevalence of hearing loss across the globe, with over 360 million patients worldwide suffering from this condition. Contributing factors include an increasingly aging population, over-exposure to noise during youth and later employment in careers utilizing heavy equipment, particularly in the military. Additionally, exposure to lifesaving drugs can have toxic side effects on the ear or its nerve supply.

"Hearing loss is a major concern for the Navy," said Kurt Yankaskas, Program Manager for Noise Induced Hearing Loss (NIHL) at the Office of Naval Research (ONR). "High risk of exposure to prolonged noise can produce auditory injuries and impairments, which can compromise safety, quality of life and effectiveness of communication." It's that last impairment—the effectiveness of communication—that ONR is particularly concerned with when it comes to warfighters, because hearing and understanding verbal commands are absolutely critical to keeping everyone safe.

The challenge for those who serve on Navy vessels or in shipyards is that noise surrounds them 24-hours a day, with no real audiological rest (quiet time). Many machinery/work spaces can reach decibels outside of safety regulations—anything above 85 decibels (typical of a dishwasher, garbage disposal or other small kitchen appliance)—for prolonged periods of time. This extended exposure to high-level noise can kill sensory hair cells found in the inner ear's cochlea; damage other essential auditory nerves; and alter brain circuits necessary for hearing and speech understanding—which can cause permanent hearing loss.



These negative health impacts result in significant economic costs and lost productivity. Nearly 500,000 U.S. veterans are currently receiving over $1 billion annually in VA disability-related compensation for hearing loss. In the general U.S. population, according to the NIH's National Institute on Deafness and Other Communication Disorders, approximately 18% of adults age 20-69 (3.8 million) who report five or more years of exposure to very loud noise have speech-frequency loss in both ears. The direct medical costs associated with hearing loss in the United States are estimated between $3.3 to $12.8 billion annually.

The U.S. Navy's NIHL program has sought to mitigate the incidence of cochlear hair cell and nerve cell damage/death in warfighters through various over-the-ear and in-the-ear noise reduction devices; however, these approaches come with a side effect of a loss in situational awareness. Flat or declining budgets in Navy Undersea Medicine programs, including NIHL, have made limited progress in developing potentially more effective methods to reduce NIHL at the point-of-injury (cochlear hair cells and nerve cells) and to reverse NIHL that has been diagnosed.

While advances are being made in developing therapeutics and delivering them to the inner ear to restore hearing, drug placement remains a major challenge to realizing optimal and consistent outcomes. Wide inter-subject, and even intra-subject, variability in outcomes has presented a major problem with current practice, introducing the potential of serious side effects, such as ototoxicity (ear damage resulting from exposure to drugs or chemicals), that can lead to permanent hearing loss and vestibular hypofunction, or dysfunction (problems with the balance system). Recent studies indicate these shortcomings can be largely overcome with precise, controlled, sustained, and low-concentration drug delivery to the area of the ear called the round

window membrane. However, current delivery methods cause systemic toxicity, do not provide sufficient dose control (injections, wicks), or are impractical (waist-mounted pumps) and expensive.

Project Objective

The primary objective is to develop a noise-level enabled drug dosing and delivery system that would prevent cochlear damage. Such a system would 'respond' in real-time to prevent noise-induced hearing loss and protect the warfighter from subsequent ear trauma. To our knowledge, this would be a first of its kind system to be explored and has the potential to revolutionize the noise induced hearing loss field. In addition, to repair existing damage, the same drug delivery system could be used to non-invasively deploy damage level-specific effective concentrations of regenerative therapeutics to the noise-damaged inner ear across the ear anatomical membrane barriers.

The device will be a microinfusion system for administration of medications. The proposed system will be small size, light-weight, will fit safely and comfortably within the patient's ear canal, and will deliver via a micropump medications into the middle ear in a precise, controlled, programmable and convenient manner, increasing effectiveness, reducing side effects and improving compliance with the therapy. Potential treatment includes middle ear and cochlear diseases, such as sudden hearing loss, Menieres disease, instances of tinnitus, and for providing pharmacological hearing protection in noise

To achieve this objective, we will use an advanced, high-throughput-capable in vitro model to investigate the effectiveness of dispensing therapeutics into the ear canal to prevent or restore noise-induced hearing loss. This system will enable therapeutic drug screening at a rate surpassing existing approaches without the use of animal models.

The expected goals and deliverables are:

- Development of an advanced in vitro hearing loss tissue model that will eliminate the need for animal models
- Creation of a test system capable of rapid, high-throughput ear therapeutics screening
- Rapid identification of effective therapeutics to prevent or restore hearing loss
- Construction of advanced hearing protection devices with built-in noise-level enabled drug delivery capabilities
- Prototyping of top performing drug and hardware hearing protection candidates

The Serban lab at UM has well-recognized expertise in biomaterials-based therapeutics and a unique approach to building on fundamental research to develop regulatory-compliant, market-ready, patient-centered ear treatments and drug delivery systems. The Serban lab's main objective will be to develop the technology to enable the non-invasive, on-demand delivery of therapeutics from the outer to the inner ear, across the ear's anatomical barriers. Specifically, the lab will focus on the:

- development and characterization of protective and/or regenerative therapeutic candidates for inner ear structures typically affected by noise
- establishment of representative in vitro mimics of tympanic membrane (that separates the outer and middle ear) and round window membrane (that separates the middle and inner ear) to enable accurate assessments of effective front-end drug dosing and eliminate the need for animal models
- development of non-invasive, ear membrane-penetrating delivery systems to deploy protective or restorative therapeutics to the inner ear

FY20 Request

This is a first year ask of a three-year project totaling $15 million. The project will be split between the University of Montana and Triton Systems. Triton Systems has been funded by the Office of Naval Research Noise Induced Hearing Loss Program for the past 8 years to develop technologies for hearing conservation. This initiative will enable a partnership between University of Montana and Triton Systems that will allow further development and ultimately translation of research being conducted in UM's Serban Lab on therapeutics for hearing loss.

Item/Project Name:	Engineered Systems to Preserve and Restore Hearing After Deleterious Stimulation
Service/Agency:	Navy
Appropriation Account:	Research and Development, Navy
Line Item or PE Title:	Warfighter Sustainment Applied Research
Line Number:	8
Program Element:	0602236N
Requested Amount:	$5 million above the President's Budget Request
Language:	Report

Noise Induced Hearing Loss.—The Committee supports the Department's Noise Induced Hearing Loss research and development initiative and recommends an increase of $5,000,000 to expand work in this program, including the research and development of a novel noise-level enabled drug dosing and delivery system designed to shield the ear tissue from mechanical stimuli (noise, pressure) that would otherwise cause temporary or permanent hearing loss.

Regional Benefit

Montana's largest industries are agriculture (including both crops and livestock), travel and tourism, timber, and mining, many of which pose the highest risk of noise induced hearing loss according to CDC data. Montana has one of the highest per capita veteran populations in the United States; about 1 in 10 residents (9.4%) are veterans, and combat veterans account for nearly 80% of that population. While the U.S. population as a whole is aging, Montana is projected to be among the four or five oldest state in the nation as measured by the 65 and older population as a share of the total. This unique combination of occupations, veterans and aging would be expected to result in a population with a higher than normal incidence of hearing loss contributing to a reduced quality of life and economic impact. The success of the proposed project could help reverse this trend.

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UNIVERSITY OF MONTANA

National Center for Landscape Fire Analysis

NCLFA contributes innovations and efficiencies to fire management that agencies cannot provide alone. We have served as a bridge among on-the-ground fire managers, students, fire science, and technology for nearly 20 years. Our work combines decades of experience of fire professionals and scientists to solve problems facing America's forests and people. NCLFA provides state-of-art expertise in support of fire and fuels management, promoting utilization of new science, technology, and practice by land managers. Our independence assures credible adjudication of forest management actions across jurisdictions and ownerships.

National Need

As managers increase the pace and scale of forest treatments, the need to sustain innovation in on-the-ground practices is critical. Treating forests at scales that reduce wildfire impacts requires active management including forest thinning, prescribed fire, and effective utilization of wildfire. The US currently lacks capacity to treat fuels efficiently and bureaucratic inflexibility hinders progress. A major thrust to overcome this mounting problem as embodied in the Shared Stewardship Initiative and the National Cohesive Strategy is to increase the scale and efficacy of forest treatments across jurisdictions. The NCLFA is uniquely positioned to accelerate progress through strategically targeted research, technology transfer, and workforce development**.**

A New Approach

NCLFA will charter a new public-private consortium called the East-West Fire Partnership to increase the scope and efficacy of forest treatments. This Partnership will integrate decades of fire science and practice to better align research, training, technology, and workforce development nationally. Consisting of NCLFA, Florida's Tall Timbers Research Station and US Forest Service Research Stations, it strategically connects the prescribed fire knowledge of the East with the wildfire knowledge of the West and is a major step toward a more cohesive national Fire Management System.

FY 2020 Request – $3.0 Million

The FY 20 President's budget essentially eliminates funding for Fire Science Research. The University of Montana requests a minimum of $3 million per year through FY 24, and the following report language to ensure these funds are allocated for that purpose.

Project Title:	National Center for Landscape Fire Analysis
Appropriation Bill:	Interior
Service/Agency:	U.S. Forest Service
Account:	Forest and Rangeland Research
Requested Amount:	$3 Million
Language:	Report

As the Forest Service directs more resources to on-the-ground forest treatment projects, additional research is needed to sustain innovation, bring science to managers, and develop a highly functional future workforce. The Committee provides $3 million for this purpose to be implemented through the National Center for Landscape Fire Analysis and its new East-West Fire Partnership.

January 31, 2019

Strategic Investments (2020 – 2024)

East-West Fire Partnership: NCLFA will join with Tall Timbers Research Station, USFS Southern Research Station and Rocky Mountain Research Station to build out a Prescribed Fire Science Consortium, establish an east-west center for wildland and prescribed fire research and training, and create a national confederation for managers to access emerging 3-D fuels data and fluid-dynamics fire behavior models. This strategic investment provides a pathway to manage fire and fuels nationally.

3-D Forests: We will grow an 18-year legacy of innovation in characterizing forests and fuels using cutting-edge laser and UAS technology. Our next-generation 3-D forests are critical for understanding how forest treatments modify fuel condition and accumulation and subsequent fire behavior. Strategic investments in the southeastern US are now producing results that are ready for integration into national fuels assessments.

Fire Prediction: We will advance characterization of the combustion process using UAS, thermography, and field measurements to calibrate new fire models and develop forest treatment strategies and prescribed fire ignition patterns that gain efficiencies and minimize risks. We will continue development of remote sensing techniques to monitor the spatial patterns of fire treatments objectively and to understand how fire is being used and where it is underutilized.

Workforce Development: Fire Management in the new Century requires people skilled in all aspects of natural resource management and knowledgeable in science and technology. NCLFA, through the East-West Fire Partnership, will expand service to students and professionals through new curricula and learning experiences and by engaging in training and technology transfer of next-gen fuels data and fire models.

Technology for Safety & Efficiency: Novel applications of UAS, mobile computing, and remote monitoring technologies will continue to be a focus of effort to improve situational awareness on wildland fire incidents. New approaches to fuels and fire management are providing pathways to improve fire fighter safety, reduce incident management costs, and minimize fire risk through direct application of state-of-art science on real incidents.

Partners and Collaborators

Federal, State, and NGO Partners (Direct agreements) Tall Timbers Research Station, Los Alamos National Laboratory USDA Forest Service Research Stations: Missoula Fire Sciences Lab and Southern Research Station Montana DNRC Fire and Aviation Management Bureau		
National Forest Systems Lolo, Bitterroot, Flathead Gallatin, Bridger-Teton Caribou-Targhee Clearwater-Nez Perce Lewis and Clark Gila, Kaibab Okanogan-Wenatchee	**National Parks** Glacier Yellowstone Denali North Cascades Grand Canyon Grand Teton	**Local, State, Federal,and NGOs** The Nature Conservancy (Georgia, Montana, & Oregon) Georgia Forestry Commission, Missoula County, Headwaters Economics, Blackfoot- Clearwater Challenge, Montana Climate Office, Fire Science Exchange Network Association of Fire Ecology, JFSP, SERDP Montana/Idaho Airshed Group

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Integrated Wildlife Analysis

National Need

A growing number of species have been petitioned for listing as Threatened or Endangered under the Endangered Species Act (ESA). The decision to list or delist a species under the ESA is significant and often has far-reaching implications so it is imperative such decisions are based on the best available science. However, the federal policymakers charged with ESA-related decisions on range-wide species often do not have the best available science due to the ad-hoc and fragmented nature of current data sharing and analysis frameworks. For many species, the respective Western Association of Fish and Wildlife Agencies (WAFWA) member agencies have the best available data. However, it is difficult for WAFWA to compile and house data from various member agencies and conduct range-wide species analyses that explicitly include the participation and input of the state agency biologists who collected the data. Adding to the challenge, state wildlife agencies can be reluctant to share state-gathered data—particularly regarding private land—with federal agencies due to concerns about data ownership and how federal decisionmakers will use the data. Taken together, these barriers often lead to suboptimal wildlife management decisions.

Addressing the Need

The Wildlife Biology Program at the University of Montana (UM) recently developed tools to help WAFWA agencies more efficiently synthesize and analyze species data. These tools are leading to improved population analyses of sage-grouse, wolverine, and mule deer, as examples. In FY20, UM is requesting congressional support to create a WAFWA-led process that would facilitate collaborative data analyses across multiple state jurisdictions. The proposed framework also would allow state and federal agencies to determine species analysis priorities within existing structures such as the Association of Fish and Wildlife Agencies (AFWA), WAFWA, and Joint Ventures, and the committee structures nested within. This process respects data ownership and provides provisions for data oversight and security that would be established through data sharing agreements. It does not require or prohibit participation by any WAFWA member agency, but instead creates a platform and workflow process that would improve collaborative data analyses spanning multiple states.

Because it is actively involved in AFWA, WAFWA and Joint Ventures, the U.S. Fish and Wildlife Service would be a full-fledged partner in the analyses and a prime beneficiary of the proposed project. FWS would benefit by having species data analyzed and published in peer-reviewed literature, providing the service with scientifically defensible information that would inform listing decisions. The proposed collaborative framework also would reduce government inefficiency, meeting the intent of the Committee's direction in the Senate Report to accompany the FY19 Interior and Environment Appropriations bill, which said, "*Federal agencies should not unnecessarily duplicate raw data, but when appropriate, evaluate existing analysis of data prepared by the States and reciprocally, share data with State wildlife managers, to ensure that the most complete data set is available for decision support systems*." Indeed, the UM-WAFWA approach would reduce duplication by providing a process for state agencies and others to compile data into one server-based database, while simultaneously giving each entity control over access to that data.

The UM proposal includes a clear approach for involvement of WAFWA state wildlife agency biologists in a way often lacking from other broad-scale species analyses. For example, previously, university or federal researchers have obtained data via open records requests, and analyses have been conducted without involvement or support of the agency employees who collected the data. This approach can lead to suboptimal analyses by failing to incorporate the professional insights and expertise of agency wildlife biologists who have studied the species in the field.

Universities have historically played an integral role in helping support the science needs of state and federal wildlife agencies. Thus, this request does not infer an exclusive WAFWA relationship with UM as WAFWA has strong relationships with many universities. Rather, it recognizes WAFWA support of the UM model for collaborative species analysis, and the considerable technical expertise and analytical capability of faculty within UM's Wildlife Biology Program, which is consistently ranked as one of the top wildlife programs in the nation. Most recently, the Wildlife Biology Program at UM was ranked as the #1 wildlife program in North America by Academic Analytics, based on the accomplishments of its faculty.

To create the proposed framework, the requested $2 million would support UM personnel responsible for compiling data, leading analysis efforts and seeing results through to publication. The funding also would support the participation of state agency biologists and could be used to leverage state agency funds to conduct multi-state collaborative research addressing questions for which there is presently insufficient data.

The proposed collaborative framework for regional analysis would benefit wildlife management agencies in all WAFWA states, including Montana, Alaska, New Mexico, California, and Oregon. Indeed, in recognition of the benefit to its members, WAFWA unanimously adopted a Memorandum of Agreement with UM in support of the proposed framework. The proposal would also benefit Department of Interior policymakers, especially at the Fish and Wildlife Service, which has requested better transboundary analysis to support management decisions.

FY 2020 Request – $2.0 Million

Project Title:	Range-Wide or Regional Analysis of Species Data
Appropriation Bill:	Interior
Service/Agency:	Fish and Wildlife Service
Account:	Resource Management; Cooperative Landscape Conservation
Requested Amount:	$2 Million above President's Request
Language:	Report

The Committee recognizes that better tools and methods are needed to enable collaborative range-wide or regional analysis of wildlife species data spanning multiple state jurisdictions and provides $2,000,000 for an effort led by the Western Association of Fish and Wildlife Agencies to establish and evaluate a platform and workflow process to conduct range-wide species analyses that includes the participation and input of biologists and state agency representatives.

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Technology for Aging and Independence

There is a significant opportunity over the next decade for the Department of Health and Human Services to simultaneously lower health care costs and improve quality of life for the older adult and disabled population by embracing the rapidly growing shift to technology solutions for daily living. These solutions are poised to extend our ability to live independently into advanced age even in the face of declining physical and cognitive health.

The Technology for Aging and Independence program will enable the University of Montana, the University of Maine, and community collaborators to harness technological advances that improve health, maximize community engagement, encourage productivity, and preserve independence among older Montanans and their families with an emphasis on rural, frontier, and tribal communities.

Program Goals and Benefits

This initiative is aligned closely with Goal 3 of the U.S. Administration for Community Living priorities focused on supporting individual self-determination and control. Products developed through the program will support self-determination, control, and community integration among older adults and people with disabilities through the employment of innovative, nonobtrusive, cost-effective and stigma-free home-delivered technologies. Product concepts and prototypes include adaptive equipment, wireless sensors, and simulation technologies that will enable older adults and people with disabilities to participate actively in community life while continuing to live safely and independently in their own homes. Goals for a federal initiative in this area include:

- Use federal grant resources to promote relationships between technology developers and public, private, and individual end-users that lead to validated solutions that target high-cost and high-priority challenges to older and disabled adult quality of life.
- Provide targeted funding for technology-based solutions that address the needs of traditionally underserved communities facing particularly severe economic and health challenges associated with the aging of their citizens, such as rural and tribal communities.
- Build research capability to critically evaluate the benefits of home and community-delivered technologies in order to inform federal policies and financial reimbursement strategies in this rapidly evolving arena.
- Catalyze through federal grant assistance, industry, university, state, and local partnerships dedicated to technology applications that will improve quality of life for aging populations while revitalizing the economic vitality of the communities in which they live.
- Evaluate funded projects and ability to scale up successful projects so they can have a national impact and improve the ability of all Americans to “age in place.”

The flourishing technology revolution in the United States is now poised to bring to bear a host of emerging products and devices in service to older and disabled Americans. Federal policies and programs need to embrace this opportunity to advance public policy objectives that aim to maximize quality of life while reducing social and health care program costs. Benefits of this technology and aging initiative include:

- Accelerated development and deployment of technologies that can reduce the costs accruing to federal programs that provide institutional and related long-term care services to older adults and persons with disabilities.
- Generation of research results that improve the ability to forecast the cost/benefit of employing aging-related technologies as part of federal financial assistance programs.

- Provision of effective and efficient services and programs in rural, frontier, and tribal communities that will maximize the safety and well-being of older adults while controlling, if not reducing, the cost of care that accrues to both the public sector and families.
- Decrease health care costs by preventing premature institutionalization and minimizing hospital readmissions through judicious use of technology including nonobtrusive monitoring systems.

FY 2020 Request - $5 million

The University of Montana requests continued funding in FY '20 to establish a national program to harness technological advances that improve health, maximize community engagement, encourage productivity, and preserve independence among older families with an emphasis on rural, frontier and tribal communities. We request $5 million in FY '20 to build on the $4 million appropriated in FY '19, and the directive report language that was included in the FY '17 and FY '18 Senate LHHS Appropriations reports.

Project Title:	Technology for Aging and Independence
Appropriation Bill:	Labor, Health and Human Services
Service/Agency:	Department of Health and Human Services, U.S. Administration for Community Living
Account:	Disability Programs, Research & Services
Requested Amount:	$5 million increase to President's Budget Request
Language:	Report

"National Institute on Disability, Independent Living, and Rehabilitation Research -- The Committee recognizes that there is a significant opportunity over the next decade for the Department to simultaneously lower healthcare costs and improve quality of life for the older adult and disabled populations by embracing the rapidly growing shift to technology solutions for independent daily living. These solutions are poised to extend the ability to live independently into advanced age, and ''age in place'', helping to bridge the ''care gap'' so that older adults and adults with disabilities might more fully participate in the community and thus avoid nursing homes and other institutionalized care as long as possible, while remaining connected to their families and community."

Regional Benefits

The University of Montana's Rural Institute for Inclusive Communities has engaged in community-based participatory research initiatives with rural- and frontier-dwelling individuals with disabilities since 1978. The Institute administers the federally-funded Research and Training Center (RTC) on Disability in Rural Communities, and co-leads the RTC on Community Living with the University of Kansas. Current research focuses on wellness and safety to promote aging-in-place through increased physical activity, fall prevention and community inclusion. Current activities include: (a) an investigation of the use of assistive technology to decrease energy expenditure during activities of daily living (ADLs) to promote greater community participation; (b) the Wheels Across Montana program which provides adaptive trikes to four partners statewide, including the Fort Peck Assiniboine and Sioux tribes, to foster greater community engagement with physical activity; and, (c) state and national partnerships to disseminate evidence-base fall prevention practices and fall risk screening tools. Partners include the CDC, NCOA and APTA and state/local partners such as the MT DPHHS, MT Area Agencies on Aging, Governor's Council on Aging, the Montana Gerontology Education Center, Missoula Coalition on Aging & Disability, the New Directions Wellness Center, and Missoula Parks and Recreation, among others.

Aging-focused research investigates applications of innovative technology and service patterns that improve health and community engagement outcomes of people with disabilities and older adults, with a particular focus on individual safety. Additionally, the Institute administers the state assistive technology grant program, MonTECH. The clinical resources of the Institute serve as a practicum and internship site for approximately 50 students each year, and as a faculty research resource for the Departments of Psychology, Speech-Hearing and Language Sciences, Social Work, Sociology, Health Economics; the Schools of Public and

Community Health Sciences, Pharmacy, Physical Therapy and Rehabilitation, the Institute for Gerontology Education, the University of Mary Occupational Therapy program (OT-D), the Rocky Mountain College Occupational Therapy program (OT-D), and the Montana State University School of Nursing. Tribal communities (13 sovereign indigenous nations on seven Reservations) in Montana are ongoing partners in the Institute's research and community service history. Telehealth partnerships are also being developed to promote greater consumer access across rural and frontier areas for health promotion, rehabilitation and successful independent living.

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Continuing Projects of National Importance

Agriculture and Related Agencies

- McIntire Stennis Cooperative Forest Research Program -- $41 million

The McIntire Stennis program provides support to state-certified Schools of Forestry across the U.S. The program is funded under the USDA's National Institute for Food and Agriculture (NIFA). Funds are formula-based and must be matched on a one-to-one basis. Funds can be used for research and training across a broad variety of efforts including ecological restoration, catastrophe management, valuing ecological services, energy conservation, biomass and biobased materials, carbon sequestration and climate change, fostering healthy forests, and maintaining competitiveness in the forestry resource sector. These funds provide critical support to UM's College of Forestry and Conservation, founded in 1913 and one of the first programs accredited by the Society of American Foresters.

Interior

- Forest Service/Joint Fire Science Research Program -- $6.914 million (same as FY 16 enacted)

Joint fire Science is zeroed out in the FY 20 President's budget. Maintaining funding levels is critical as the program is designed to integrate multiple fire programs to give wildland fire managers new approaches, techniques, information and advanced tools to help them address rising fire suppression costs, deteriorating ecosystems, increasing fire hazards and other disturbances that affect water and environmental quality.

- Cooperative Wildlife Research Unit (CWRU) -- $23.9 million (same as FY '17 budget request)

The USGS CRU program is zeroed out in the President's budget. UM houses the Montana Cooperative Wildlife Research Unit. Research emphases within the Unit include ecology and management of carnivores, applied landscape ecology, management of large game, interactions between forest management and wildlife, environmental influences on the demography and diversity of birds and related issues. CRUs generally have several positions assigned to a campus.

Established Program to Stimulate Competitive Research (EPSCoR)

- NSF EPSCoR under CJS Appropriations -- $190 million

Montana NSF EPSCoR is a statewide science infrastructure program funded by the National Science Foundation. EPSCoR builds capacity across the state in science and technology through investments in people, tools, and ideas. Montana currently has an NSF Track-1 EPSCoR of approximately $4M per year to develop research infrastructure. The NSF EPSCoR program also funds Track-2 awards which include several NSF EPSCoR jurisdictions and recently announced a new Track 4 program.

- NIH Institutional Development Award (IDeA) under LHHS Appropriations – $400 million

The IDeA program is NIH's version of EPSCoR. There are two components to IDeA. One is the INBRE program which seeks to develop a network of researchers in the medical and biomedical fields and the other is the COBRE program which supports the development of research clusters. UM currently has a COBRE 3 award and was recently awarded a COBRE 2 award.

- DoD EPSCoR under Defense Appropriations -- $25 million

The FY 18 National Defense Authorization Act authorized the Department of Defense to restore the DOD EPSCoR program (DEPSCoR). $12 million was appropriated for DEPSCoR in FY 19. Funds are requested under Defense Wide RDT&E Line #3, PE 0601110D8Z.