THE CONSERVATION FUNDING CRISIS

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EXECUTIVE SUMMARY

Pressures on public lands are rapidly increasing, while funding for their conservation has rapidly decreased. Even public lands that have experienced stagnant or even very small increases in conservation funding, are still unable to keep up with ever-growing visitation and use levels. Years of neglect, in the form of too little funding for land protection and recreation management, are snowballing and are severely compromising the ecological integrity and recreational enjoyment of U.S. public lands.

Conservation Economics Institute examined trends in funding for three primary federal land management agencies: the Bureau of Land Management (BLM), the U.S. Forest Service (USFS), and the U.S. Fish and Wildlife Service (USFWS). Funding levels for land management activities were aggregated to broad programs such as Protection/Restoration, Recreation, Extraction, and Grazing at the national level and at the California BLM state-level, and were examined from Fiscal Years 2010 to 2021. USFS FY 2021 budget data are not included in our analyses due to budget restructuring that rendered the data incomparable to previous years. An examination of federal funding levels for land management and related outputs provides valuable information for understanding which programs need greater funding and how changes in categorical funding can affect conservation.

There are several findings of significant concern from our analysis. Federal funding for conservation activities on public lands, including protection and restoration of landscapes and support for outdoor recreation, has not kept up with environmental stressors and rapidly increasing visitation. If these funding trends continue, public lands are at risk of dramatic declines in recreational opportunities and environmental quality.

The federal funding trends are indicative of a conservation crisis, in which it becomes impossible for conservation funds to keep pace with the increased usage of federal lands, much less address the ever-growing backlog of conservation and maintenance needs. Increased funding is needed for greater conservation, protection of cultural and ecological resources, enforcement of regulations, ecological restoration, deferred maintenance, and recreational infrastructure.

Our investigation of federal land management budget trends in real dollars (adjusted for inflation) revealed the following troubling trends:

- Due to exceptional drought, ***funding for wildfire management*** has increased, but often in lieu of funding for conservation and recreation programs that can prevent wildfires and increase wildfire resilience. This concern is most prominent for the USFS but also for California BLM budgets.
- ***Conservation funding for the USFS has dropped precipitously.*** USFS appropriations for Protection/Restoration activities declined 37% between 2010 and 2020. When land acquisition funds (coming from the LWCF) are removed, Protection/Restoration funding decreased 43% during this time. USFS appropriations for Recreation programs decreased 11% between 2010 and 2020.
- Over the last decade, ***rapidly increasing visitation and recreational use of public lands has vastly outpaced recreation funding*** for the BLM, USFS, and USFWS. Per-visit recreation appropriations on these federal lands have dropped dramatically. The USFS averaged almost $4.50 of Recreation funding per visit in 2010, for example. By 2022, that amount had dropped by 25% to $3.37 per visit.
- ***Large recreation budget deficits have developed for all federal agencies.*** While previous recreation funding levels for federal agencies were already insufficient to fully protect and facilitate sustainable recreation, the current funding levels are much worse.
- ***Funding for grazing and oil and gas extraction on BLM lands has increased at a higher rate than funding for conservation activities***. Despite that increase, however, rangeland health has declined and the backlog of restoration work needed to offset the ef-

fects of oil and gas development has expanded.

- ***While oil production on BLM lands has rapidly increased, the staffing and resources necessary to mitigate negative impacts have not kept pace.*** Since 2017, oil production on BLM lands has increased by 117% yet the number of full-time equivalent BLM employees working in the oil and gas arena declined 2% during the study years.
- ***Recreation funding is experiencing an increase in dependence on recreation user fees.*** User fees are a helpful form of conservation funding, but they have increased while general appropriations have decreased, resulting in a net overall decrease in recreation funding. Moreover, increasing recreation funding by relying more on user fees undermines equitable access by placing a greater proportional burden on lower income Americans.
- ***The vast majority of new funding created by the Great American Outdoors Act in 2020 (the Legacy Restoration Fund) is allocated to the National Park Service.*** While good for national parks it is insufficient to address the overarching problem.

Recommendations:

Given that outdoor recreation is more sustainable than traditional extractive industries, it makes sense to promote increased funding for public land recreation, conservation, and restoration. In this context, we recommend the following:

- Broadly, federal funding for conservation must increase to keep pace with increasing conservation and recreation demands.
- Conservation funding and capacity resulting from recreation fees, agency partners, and volunteer groups must be an augmentation—not a substitute—for sufficient congressional appropriations.
- To drive key changes in funding, members of the public and their elected leaders need to be made more aware of the damaging funding trends affecting public lands. Actions that could help include:
  - ***Further independent auditing*** of damaging conservation funding trends impacting public lands, such as analyses conducted by the Government Accountability Office or the Congressional Research Service.
  - Federal land management agencies should include ***consistent and comparable budgeting*** criteria across agencies (BLM, NPS, USFS, USFWS) and provide greater transparency in budgeting for public lands. Having a dedicated budgeting office and liaisons to help the public access data and understand funding trends would be a significant improvement. Annual public reporting of expenditures and accomplishments by state (BLM) or Region (USFS / USFWS) could further increase accountability.
  - Consistent inclusion of summary tables in Budget Justification documents that clearly and easily illustrate comparisons over years is needed to increase understanding of funding trends. In particular, the USFS should provide a bridge that makes budget data starting in FY 2021 (restructured due to Budget Modernization) comparable to previous years.
  - More broadly, consistent budgeting practices and presentation of budget documents across agencies would increase Congressional and public understanding of agency needs and opportunities.
  - Finally, national Budget Justification data and trends should be provided in usable spreadsheet formats to augment the PDF documents that are currently the primary means of conveying budget information.

CONTENTS

1. INTRODUCTION

America is blessed with a wide array of public lands, from our great national parks to extensive national forests, bountiful national wildlife refuges, and diverse Bureau of Land Management lands. In recent decades Americans have increasingly used and enjoyed this irreplaceable legacy. Recreation and visitation to public lands in the U.S. have rapidly increased since the mid-2010s, and especially during the COVID-19 pandemic in 2020 and 2021, spurring overuse and resource damage. With a range of increasing pressures affecting public lands, it would be logical to assume that federal conservation funding to counter these stressors would be increasing at a similar rate. Unfortunately, this is not the case.

Funding for conservation on public lands[1] should be commensurate with the services provided, the level of use, and the funding needed to overcome land degradation. However, conservation on U.S. public lands has historically been severely underfunded as evidenced by vast backlogs of deferred maintenance, thousands of unplugged abandoned oil and gas wells, a lack of enforcement to protect cultural and ecological resources, and widespread degradation of public landscapes. Inadequate funding for public lands conservation became more obvious during the COVID-19 pandemic, as public lands became a primary outlet for people to get outside, resulting in substantial increases in outdoor recreation, driving increases in trash and resource degradation.

> *"Over 80 million people visited BLM lands last year. That quickly snowballs into something that's out of our control."*
>
> *–Tracy Stone-Manning, Director, BLM (WyoFile, May-2022)*

Conservation's value is manifold—ranging from the protection of wildlife and biodiversity, to use values derived from recreation, to passive (or non-use) use values derived from existence and bequest values. Collectively these are ecosystem services, or the societal benefits of nature afforded by public lands. Conservation on public lands also can support surrounding community economies through tourism expenditures and amenity-based development. A logical argument for funding conservation is that as pressures and economic demand for public lands increase, they become more valuable and require ever greater investments.

However, trends in conservation funding for public lands in the U.S. have not been comprehensively assessed, making it difficult to identify programs that are not keeping pace with conservation needs. To better understand recent trends in conservation funding and broader programmatic funding of the primary federal land management agencies, we conducted a trend analysis investigating federal funding over the last decade for the Bureau of Land Management (BLM), the U.S. Forest Service (USFS), and the U.S. Fish and Wildlife Service (USFWS).

2. METHODS

To determine relative changes in federal funding for public lands, we tracked previous funding levels and compared various programs. We focused on three federal land management agencies the BLM, the USFS, and the USFWS. We assess national funding trends for all three agencies as well as state-level trends for the California BLM from 2010 to 2021. However, we do not include USFS FY 2021 budget data. A major restructuring of the USFS FY 2021 budget (Budget Modernization) prevents an apples-to-apples comparison to previous budgets.

2.1 DATA COLLECTION AND AGGREGATION

Budget line items (BLIs) were categorized into one of the following funding categories: Protection/Restoration, Recreation, Renewable Energy,[2] Extraction,

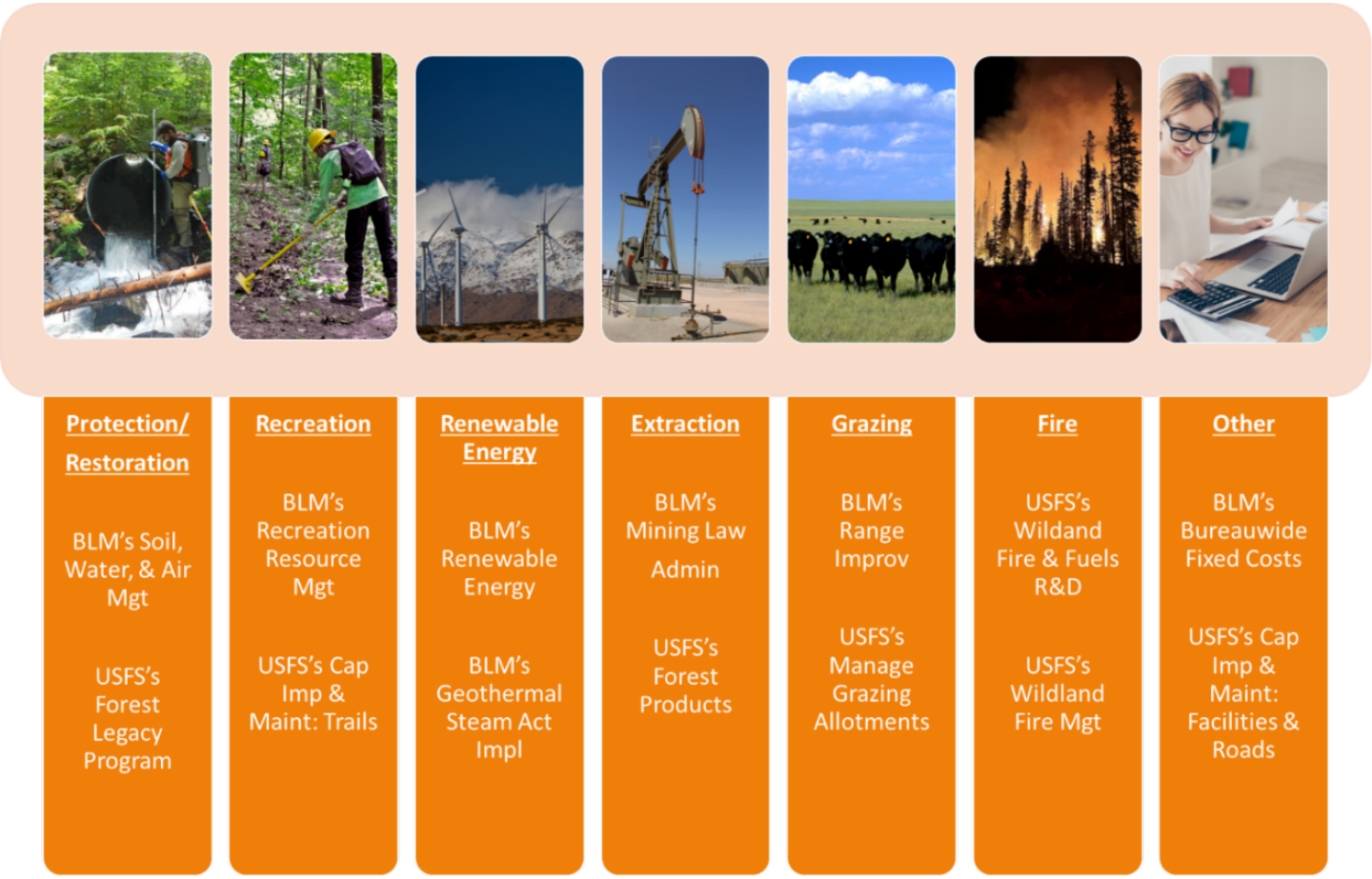
1 Throughout this document, we refer to federal lands open to the public as "public lands" and focus strictly on three federal land management agencies: the Bureau of Land Management, the U.S. Forest Service, and the U.S. Fish and Wildlife Service.

2 While Renewable Energy funding was isolated, it is not illustrated in our findings due to its

Grazing, Fire, and Other (Figure 1 summarizes the funding categories used for USFS and BLM and provides examples of the types of BLIs assigned to each). For comparisons, we grouped the Protection/Restoration and Recreation funding categories into a larger "Conservation" category and grouped Extraction and Grazing funding categories together to make an "Extraction and Grazing" category. Detailed examples of programmatic funding categories and methods are presented in **Appendix A**.

Because our USFWS analysis is restricted solely to considering trends in recreation budgets, we use only two funding categories for USFWS BLIs – Recreation and Non-Recreation. Complete lists of BLIs included in each funding category are provided on the Conservation Economics Institute website.[3] Visitation data for all federal agencies were collected from annual reports.[4] Finally, throughout this report, years refer to federal fiscal years and (unless otherwise noted) dollars are in millions of constant FY2020 dollars. Dollar values were converted from nominal dollars to constant FY2020 dollars using the GDP Chained Price Index published online by the Office of Management and Budget (OMB).[5]

Figure 1: Funding categories used to classify USFS and BLM Budget Line Items



extremely small role in federal budgets. Renewable Energy averaged about 2% of the BLM's annual budget since 2010 and was largely absent in USFS and USFWS appropriations.

3 The list of BLIs included in each funding category can be accessed here: https://www.conservationecon.org/public-lands.

4 BLM visitation: https://www.blm.gov/about/data/public-land-statistics; USFS visitation: https://www.fs.usda.gov/about-agency/nvum; USFWS visitation: https://www.fws.gov/library/collections/national-wildlife-refuge-system-annual-lands-reports.

5 https://www.whitehouse.gov/omb/budget/historical-tables/, Table 10.1.

3. FINDINGS

3.1 TOTAL BUDGETS AND AVERAGE FUNDING CATEGORY APPROPRIATIONS

Changes in total funding levels for the BLM, USFS, and USFWS national agency budgets are summarized in Table 1.

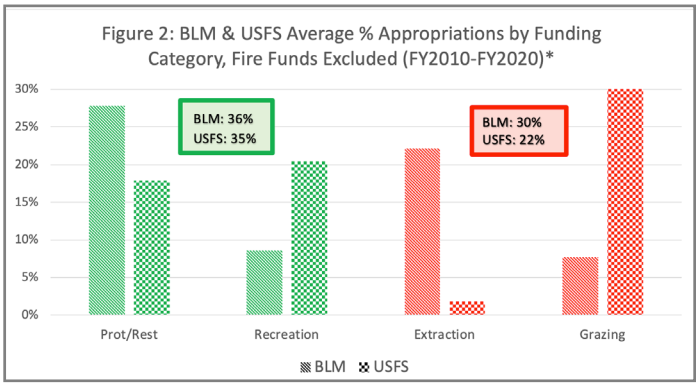
Table 1: Total Appropriations for BLM, USFS, and USFWS

			Change in Funding	
Agency	*Year: Funding*		*$*	*%*
BLM[6]	FY2010: $1.40B	FY2021: $1.43B	$37M	3%
USFS	FY2010: $6.68B	FY2020: $8.14B	$1.47B	22%
USFWS	FY2016: $2.82B	FY2021: $3.13B	$314M	11%

National BLM funding increased very slightly during the study period, though total FTEs fell by 12%. In contrast to BLM's minimal 3% budget growth, funding for the USFS has increased by 22%. However, BLM funding data do not include monies for wildland fire management, while USFS funding data do. If we exclude fire monies from the national USFS data, we find that the USFS budget has experienced a 2% decline. The USFWS budget, which also does not include fire dollars, increased 11% between FY2016 and FY2021.

6 FTE employment for BLM decreased by 12% (or 828 FTEs) from FY2010 to FY2020, despite a slight increase in funding during that period.

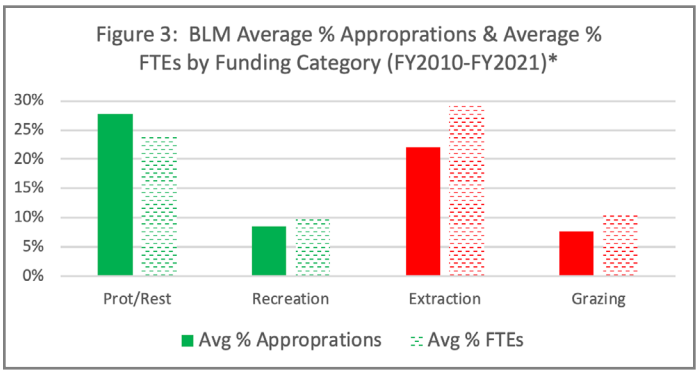
The graph below (Figure 2) illustrates the average percentages of the BLM and USFS national budgets allocated to each funding category considered in our analysis. To make the USFS and BLM funding data comparable, we have excluded Fire dollars from the USFS data.[7]



Amounts do not add to 100% due to the exclusion of the Renewable Energy (2% for BLM and minuscule for USFS) and Other funding categories. The Other category comprises 32% of the BLM and 43% of the USFS budget (when Fire is excluded). Other includes budget items such as general overhead and administration, rights of way, and land and realty management.

On average, the portion of the BLM budget designated for Protection/Restoration purposes is slightly higher than that of the USFS budget, though Recreation is more heavily funded by the USFS. Total Conservation appropriations (the sum of Protection/Restoration and Recreation) on average account for 36% of the BLM budget and 35% of the USFS budget. Extraction & Grazing activities are more heavily funded by the BLM than by the USFS; Extraction & Grazing account for almost a third of the BLM budget but only 22% of the USFS budget. Grazing receives minimal funding on USFS lands. Both agencies have sizeable portions of their budgets in BLIs categorized as Other, though this is particularly true for the USFS, for which Other comprises 43% of the budget when excluding their extensive Fire program.

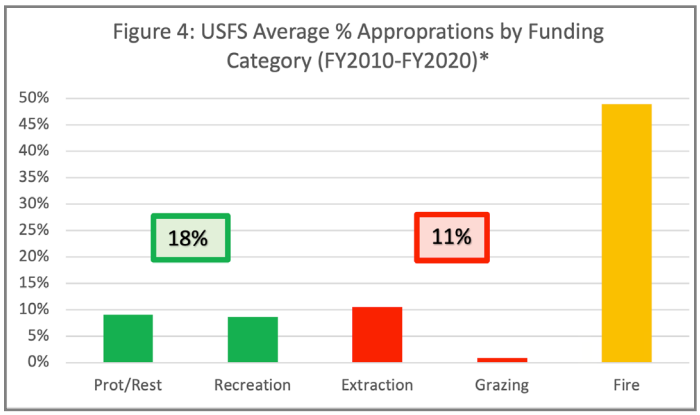
Figure 3 depicts BLM's FY2010-FY2021 average percent of appropriations and FTEs within each funding category.



Amounts do not add to 100% due to the exclusion of the Renewable Energy (2%) and Other funding categories. The Other category comprises 32% of the BLM budget. Other includes budget items such as general overhead and administration, rights of way, and land and realty management.

Extraction and Grazing are both more FTE-intensive than Conservation funding categories. In total, Extraction & Grazing account for 30% of appropriations and 40% of all FTEs, while Conservation accounts for 36% of appropriations and 34% of FTEs.

The figure below (Figure 4) depicts the average percent of USFS appropriations in each funding category between FY2011 and FY2020. Fire is included, thereby providing a more complete picture of the USFS budget (though less comparable to the BLM budget).



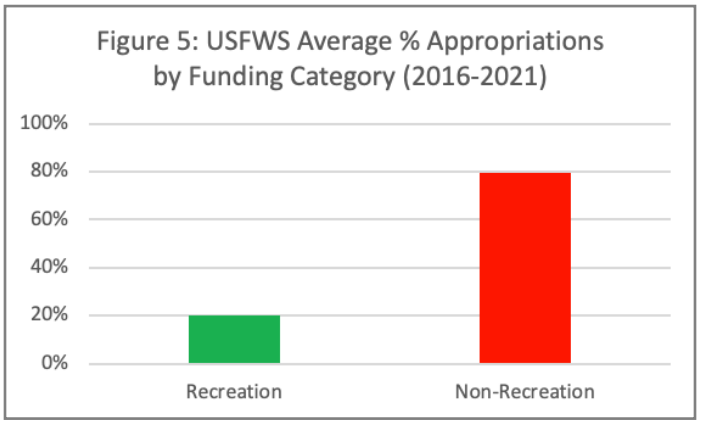
Amounts do not add to 100% due to the exclusion of the Other funding category, which comprises 22% of the USFS budget when Fire is included. Other includes budget items such as general overhead and administration, rights of way, and land and realty management.

On average, nearly 50% of USFS approprations are for wildland fire management and related activities. In FY2020 wildland fire-related funding had increased to 60% of total appropriations. With almost 20% of the budget categorized as Other, there is little funding available for remaining programs.

As noted previously, the USFWS is substantial-

7 Wildland fire management dollars are appropriated directly to the USFS. As noted previously, wildland fire management dollars are appropriated to the Department of the Interior, which in turn allocates funds to its various agencies and bureaus. In FY2021 the DOI received $1.5 billion in wildland fire management funding (https://www.doi.gov/wildlandfire/budget). Given that these funds are to be distributed amongst the BLM, USFWS, NPS, and BIA, the BLM clearly receives significantly less money than the USFS for the purpose of wildland fire management.

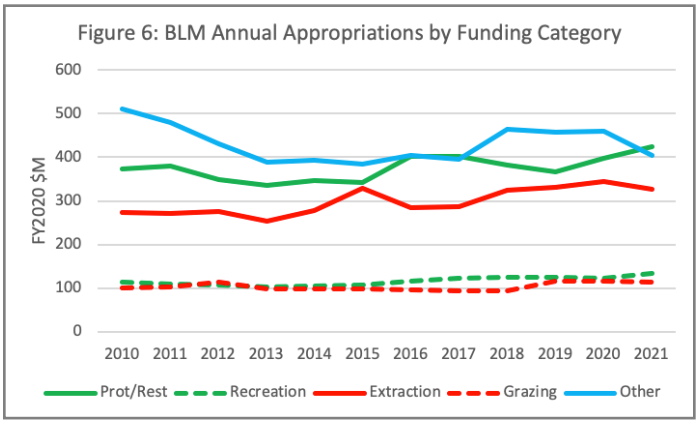
ly more conservation-focused than either the BLM or USFS, and this is reflected in the USFWS Budget Justifications documents and appropriations. We therefore limit our analysis of the USFWS to assessing Recreation and Non-Recreation funding.



The USFWS spends a larger portion of its budget in support of recreation activities than either the BLM or the USFS – 20% of all dollars appropriated to the USFWS are for Recreation purposes (Figure 5). This is in part due to USFWS sport fish restoration activities that span both federal and state lands.

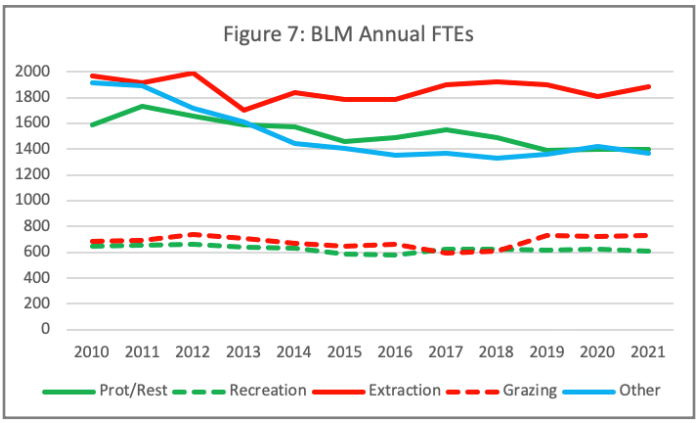
3.2 TRENDS IN BUDGET PRIORITIES

Next, we consider trends in each agency's funding priorities by assessing changes over time in appropriations made to each funding category. The following graph (Figure 6) illustrates recent trends in national BLM funding priorities.



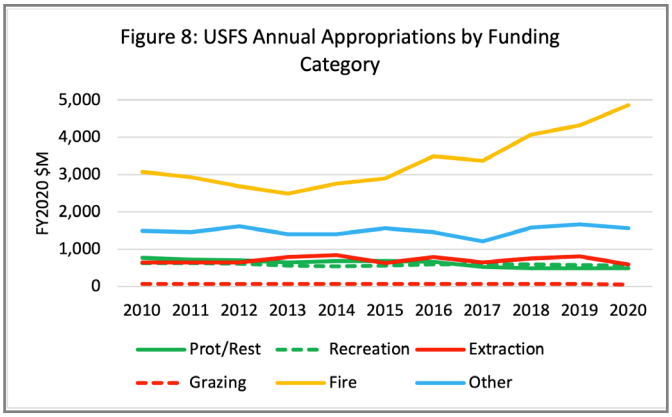
Funding for nearly all categories has increased. The most notable increase is for Extraction activities, which has grown 20% since FY2010. In total the Extraction and Grazing budgets have increased $69M (18%), while Conservation funding (comprising Protection/Restoration and Recreation funding) has increased $76M (15%). In contrast to most individual funding categories, Other funding has decreased since FY2010 – a result of decreases for a multitude of programs, including rights-of-way processing, land acquisition, construction, land and realty management, and deferred and annual maintenance.

Trends in the number of FTEs attributable to each BLM funding category for FY2010-FY2021 are depicted in Figure 7.

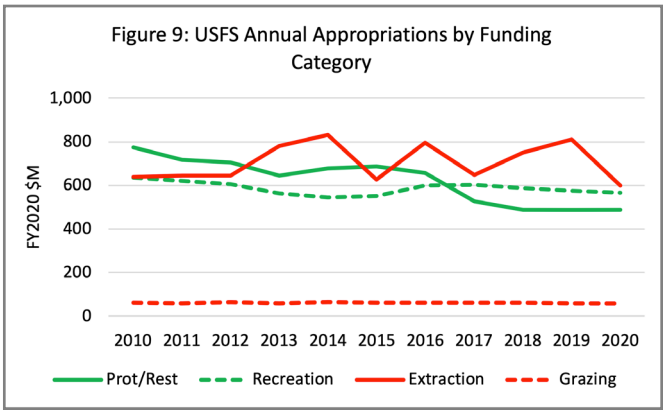


The most notable change has occurred within the Other category, which in FY2021 had nearly 30% fewer FTEs than in FY2010. The reduction in Other FTEs and funding suggests the BLM has become less top heavy and is using fewer resources for overhead type activities and expenses. The second largest FTE reduction in this time period was for Protection/Restoration, which experienced a 12% FTE reduction (though as noted above funding for this category increased by 13% during this period).

Figures 8 and 9 illustrate trends in USFS funding for FY2010-FY2020; Figure 8 includes all funding categories, while Figure 9 excludes Fire and Other so that trends in smaller and more isolated funding categories can be more readily perceived.



Appropriations for wildfire-related activities have dominated the USFS budget in recent years, and the dominance of Fire dollars is rapidly increasing; between FY2010 and FY2020 USFS fire-related appropriations increased nearly 60% and comprised 60% of the total USFS budget. Between FY2010 and FY2020 the USFS Fire budget grew by $1.6 billion and Other increased by $68 million, yet *total* USFS appropriations grew by only $1.5 billion. Appropriations for Protection/Restoration, and Recreation, have clearly declined, as illustrated in Figure 9 below.

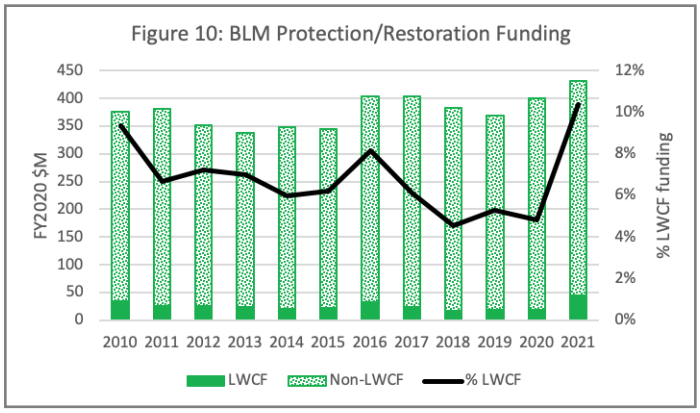


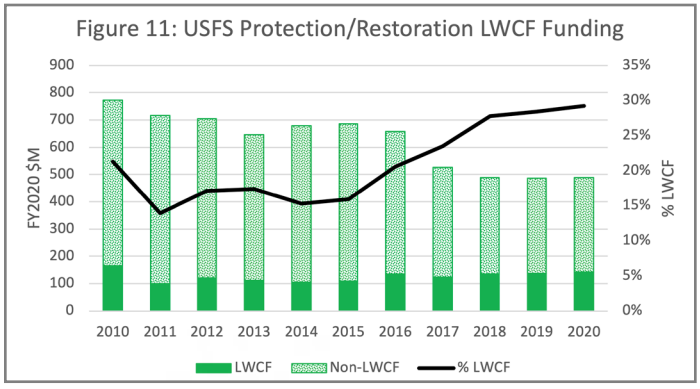
Collectively, USFS Conservation funding (including Protection/Restoration and Recreation) has declined 25% since FY2010, while Extraction & Grazing funding has declined 6%. Funding for Recreation has declined by more than $40 million since FY2010. The decline in Protection/Restoration funding has been steady and prolonged; the decline began in earnest after FY2016 and since that time has fallen 26%. Although funding for Extraction programs has fluctuated a bit, until FY2020 it appeared to do so within approximately $600 and $800 million.

3.3 TRENDS IN CONSERVATION FUNDING

Trends in Protection/Restoration Funding

There were dramatically different trends in BLM and USFS Protection/Restoration funding during the study period. Whereas BLM's Protection/Restoration funding has increased somewhat (13%) since FY2010, Protection/Restoration funding for the USFS has declined 37% since FY2010 (see Figures 10 and 11).





The biggest single-year decline in USFS Protection/Restoration funding occurred in FY2017, when funds for this category dropped by 20%. Another marked difference between the two agencies' Protection/Restoration budgets is the portion funded by the Land and Water Conservation Fund (LWCF). In FY 2020, LWCF funds accounted for almost a third of the USFS Protection/Restoration budget.

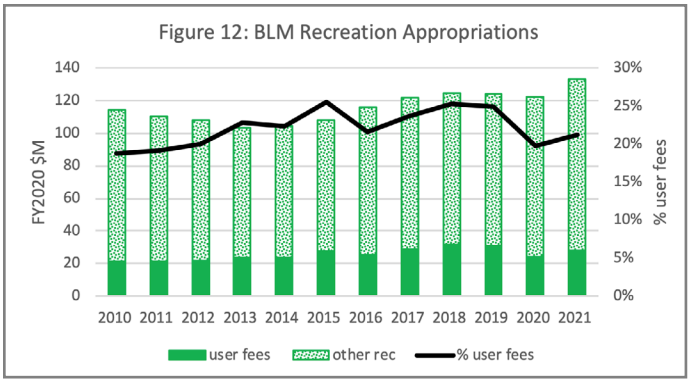
Mount Baden Powell and the Sheep Mountain Wilderness recharge and protect the headwaters of the San Gabriel River. (Photo credit - Pew Charitable Trusts)

CASE STUDY #1 - *The 346,000-acre **San Gabriel Mountains National Monument** (managed by the USFS) serves as a premiere recreation locale for 15 million nearby residents. Within the Monument's boundaries are hundreds of California-endemic species, including 53 Forest-Sensitive plants. Five wilderness areas offer opportunities for escape and solitude, but canyons of the San Gabriel River serve as the unit's most popular destinations. For many years, the Forest Service and an extensive consortium of partner groups outfitted River Rangers and trailhead ambassadors providing multilingual interpretation, first aid, and visitor support. With declining funding leading to a loss of oversight capacity, this boots-on-the-ground workforce has disappeared. Rapidly increasing visitation has led to trash, anthropogenic fire, graffiti, illegal incursions, access limitations, and water quality degradation that all diminish visitor experiences and conservation outcomes. At present staffing levels, the Monument is at risk of being "loved to death". Anthropogenic wildfires, degrading infrastructure, and scarce educational and interpretive resources result in frequent suppression and search and rescue efforts and present tangible dangers to visitors and nearby residents alike.*

On busy summer weekends, large numbers of visitors converge to enjoy recreation opportunities along the San Gabriel River. (Photo credit - Sierra Club, Angeles Chapter)

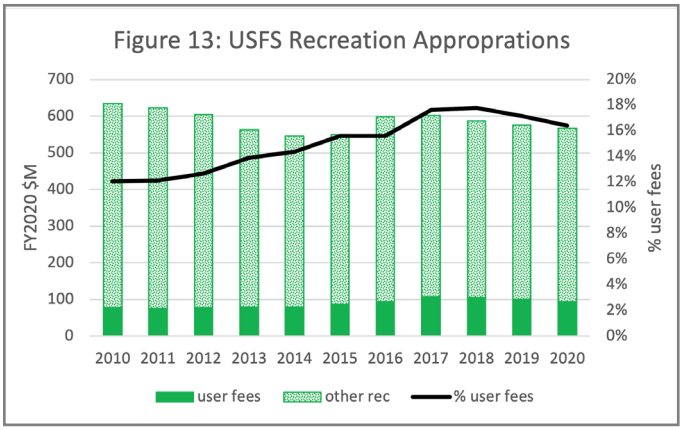
Trends in Recreation Funding

Total BLM recreation appropriations are shown in Figure 12. BLM Recreation funding decreased from 2010 to 2013 but has been trending slightly upwards since then.



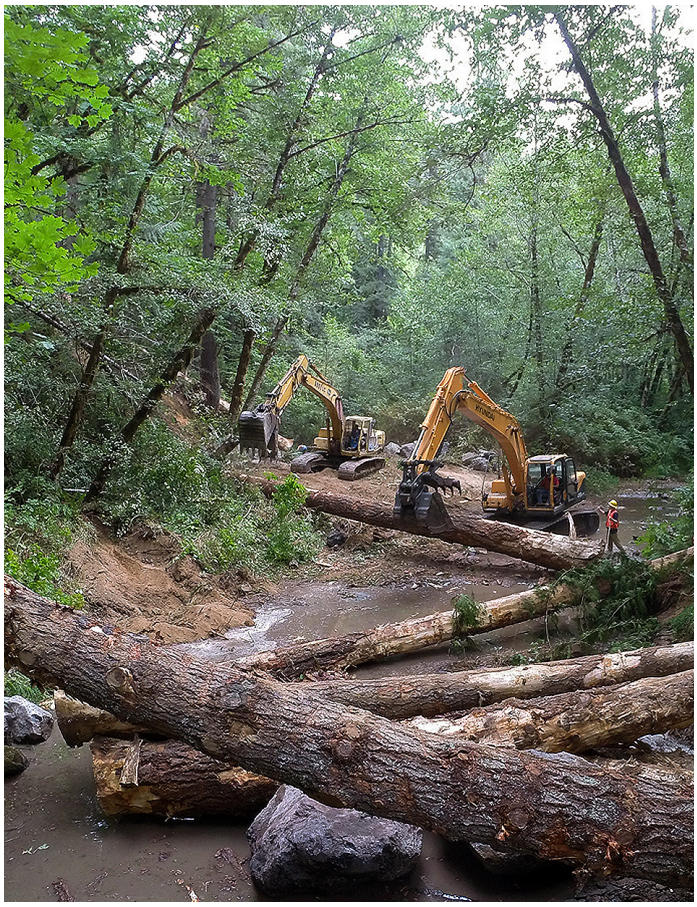
User fees as a percentage of total Recreation appropriations for the BLM have grown over time; recreation fees provided $21 million in FY2010 and grew to $31 million in FY2019. There has been sporadic but slow growth in the portion of the recreation budget funded by users. Part of the erratic behavior is a by-product of changes in the BLM budget structure.[8]

Figure 13 depicts changes in USFS Recreation funding and its composition.[9] USFS Recreation appropriations have been dropping for a number of years.



Between FY2010 and FY2020, USFS user fees slowly increased while other recreation funding declined. The trends in user fees and other recreation funding caused the percent of Recreation funding provided by users to slowly increase from 12% to 16% between FY2010 and FY2020.

> *"Most recently, during the COVID-19 pandemic, the Agency saw a tremendous increase in recreational visits to national forests. In 2020 alone, there were approximately 168 million visits to lands managed by the Forest Service, an increase of 18 million visits compared to 2019."*
>
> *–Chris French, Deputy Chief, National Forest System (Senate Committee on Energy & Natural Resources, Subcommittee on National Parks, Feb-2022)*



8 Prior to FY2016 there was no budget line item capturing land acquisition for recreational access purposes. Certainly, the BLM purchased land for recreational purposes prior to FY2016, but these activities were not captured separately in the budget. Rather, prior to FY2016 recreational access land purchases were combined into more general land acquisition. This change creates a false increase in federal funding for Recreation and makes it difficult to ascertain true changes in the funding composition. It would appear, though, that recreation fees account for most of the increase in Recreation funding.

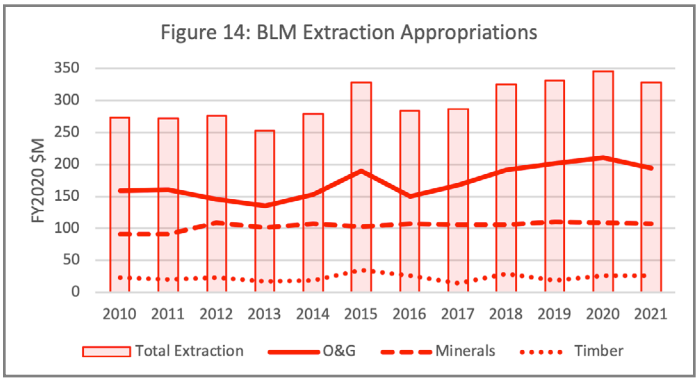
9 Of note the USFS budget does not delineate a separate land acquisition BLI for recreational access. Rather, all land acquisition is combined into one budget line item; land acquisition for recreational purposes is therefore not captured in our analysis.

USFWS Recreation funding has slowly but steadily increased over the years such that Recreation funding was $93 million (16%) higher in FY2021 than in FY2016. User fees are an insignificant part of the USFWS Recreation budget, accounting for less than 2% of Recreation funding.

3.4 TRENDS IN EXTRACTION & GRAZING FUNDING

Grazing appropriations are minimal for the USFS (comprising only 1% of the total budget), but comprise a notably larger, though still relatively small, portion of the BLM budget. On average Grazing has consistently comprised approximately 8% of total BLM appropriations (roughly $100M).

Below we consider trends in Extraction funding, both in total and its various components. Figure 14 provides details of national BLM Extraction funding.



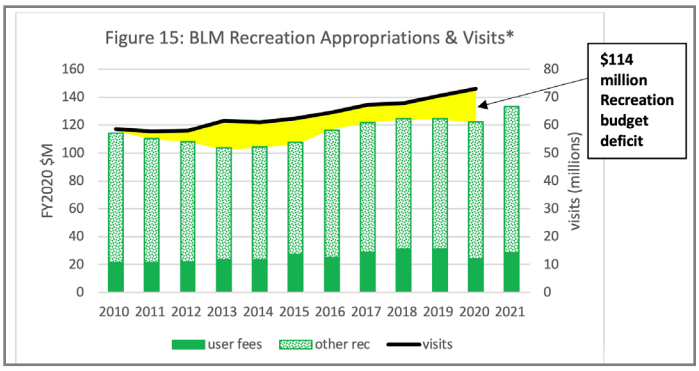
Oil and gas make up the largest portion of the BLM Extraction budget (57%), and therefore drive the behavior of total Extraction funding. While funding has increased for all three extraction categories, funding for oil and gas has increased the most; oil and gas funding increased 22% between FY2010 and FY2021. In contrast, USFS Extraction funding is not surprisingly dominated by timber; Minerals and O&G make up a mere 12% of the Extraction category, while Timber comprises 88%.

4. FEDERAL LANDS' OUTPUTS

In addition to trends in federal land management agency budgets, it is important to understand trends in both the outputs from and conditions of federal lands. Because federal lands, in particular USFS and BLM lands, have multi-use mandates, we consider trends in recreation use, extraction of natural resources, and ecosystem conditions.

4.1 RECREATION VISITS

Figure 15 illustrates trends in nationwide BLM recreation visits relative to trends in national BLM Recreation funding.

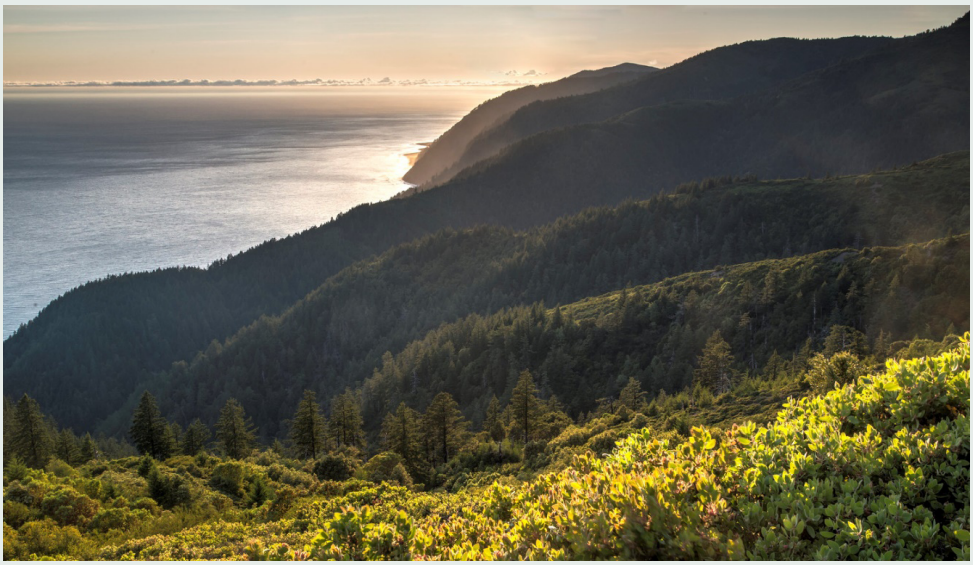


**BLM FY2021 visitation data were not available at the time of this analysis.*

BLM's Recreation funding has not kept pace with increasing visitation levels; between FY2010 and FY2020 visits to BLM-managed federal lands increased 25% while Recreation funding increased only 7%. Recreation dollars per visit has thus declined due to both increased visitation and decreased funding. The Recreation budget deficit – the area between visits and Recreation funding – is a measure of the cumulative funding deficit relative to FY2010 funding levels. Although FY2010 Recreation funding levels were likely insufficient to adequately manage recreation pressures and maintain a quality experience for visitors, the problem of insufficient funding was far worse in FY2021 than in FY2010. The large $114 million Recreation budget deficit is likely to have significant negative consequences for land, water, ecosystem, and habitat health, and will also negatively impact the quality of the recreation experience on BLM managed federal lands.

CASE STUDY #2

*The 68,000-acre **King Range National Conservation Area** (managed by BLM) is a region so steep and rugged that it remains the only roadless stretch of an otherwise crowded California coast. The 4,000-foot King Range towers above black sand beaches, as its chief watershed flows unimpeded from its headwaters 62 miles to the sea. Recognizing its unique attributes and stunning beauty, the BLM designated this landscape as the nation's first National Conservation Area (NCA) in 1970.*



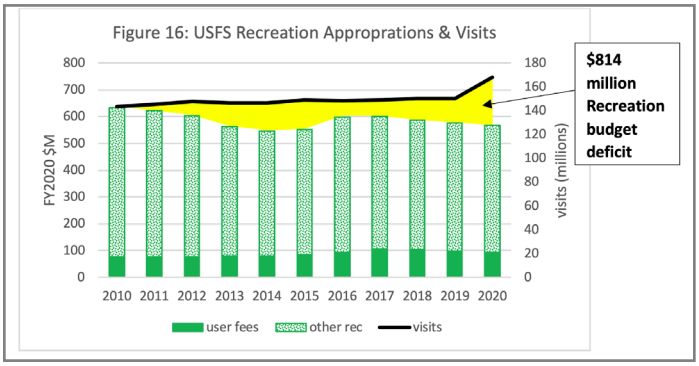
The King Range National Conservation Area protects some of the most ecologically intact coastal habitats in the contiguous United States. (Photo credit - BLM)

Insufficient funding and staffing of the King Range National Conservation Area has resulted in vehicle damage to sensitive habitats, dilapidated recreation infrastructure, and unmanaged visitor use. (Photo credit - King Range Alliance)

The rarity of coastal wilderness has long contributed to heavy use but more recently, compounding factors caused a massive surge in visitation, which rivals that of many National Parks. As with many wild places that were once "out of sight, out of mind", social media has brought international renown. A warming and drying climate throughout California has resulted in a nearly year-round fire season. Visitors seeking respite from the hostile inland climate flock to this coastal bastion, as have thousands of newly-minted outdoor enthusiasts seeking safe, distanced recreation during the Covid-19 pandemic.

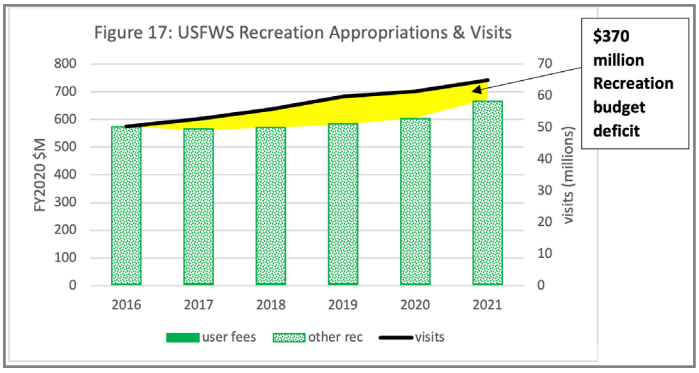
These crowds have overwhelmed the recreation area's capacity to handle them. This problem and its often dire consequences could be relieved with strategic, proactive investment in infrastructure and first responder staffing, which also would ease the burden that falls on nearby rural communities. Similar investment in enhanced visitor education would preempt resource damage in the form of trash, graffiti, and human-caused wildfire, as well as the significant expense of frequent search and rescue efforts.

Figure 16 shows similar but more extreme and concerning trends for USFS-managed federal lands.



Between FY2010 and FY2019 there was little increase in recreation visits to USFS-managed lands, though in FY2020 the COVID-19 pandemic caused a dramatic and sharp increase in recreation pressures – in FY2020 there were 18 million more recreation visits made to USFS lands than in FY2019. The visitation increase coupled with the decline in Recreation funding between FY2010 and FY2020 is certain to have significant negative consequences on both the recreation experience as well as ecosystem and habitat health. Significant investments will be necessary to address the cumulative $814 million recreation deficit.

Even on USFWS lands, where investment in Recreation has increased 16% since FY2016, Recreation funding is falling short, as can be seen in Figure 17 – recreation visits to USFWS lands have increased nearly 30% during this same time period.

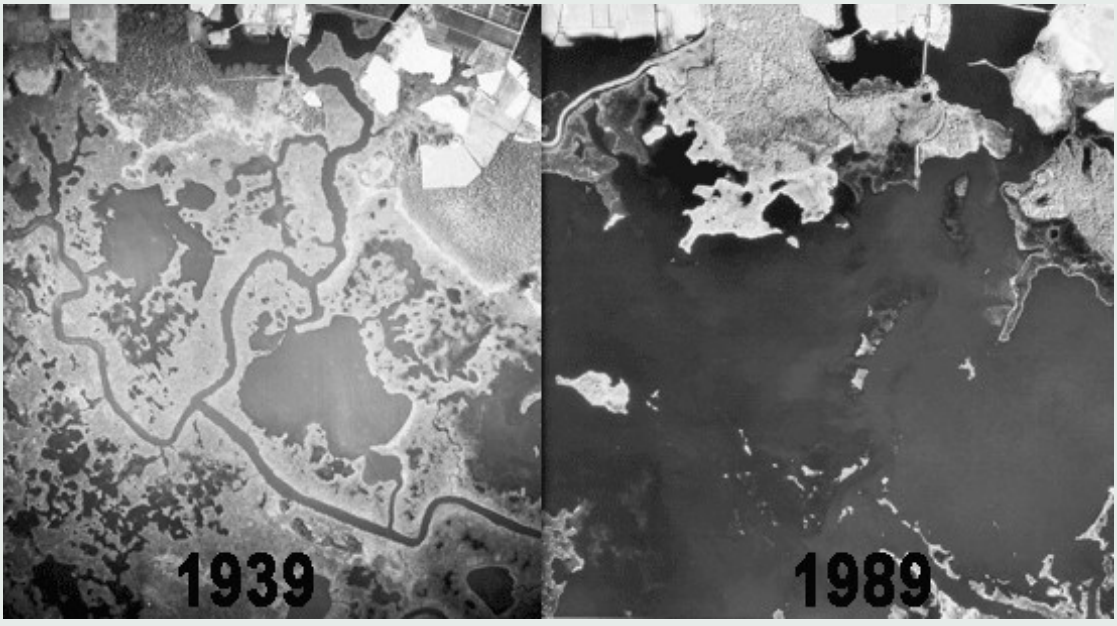


The Recreation budget deficit that has accumulated in the five years following FY2016 amounts to $370 million, an amount more than three times larger than the deficit accumulated by the BLM in ten years.

> *"I have serious concerns about the impact of declining funding for boots-on-the-ground activities and the future of the U.S. Fish & Wildlife Service -- and the National Wildlife Refuge System in particular. I don't believe I've seen such a negative impact on active staffing, in particular, in my 45-year Refuge career."*
>
> *– Kim Forrest, San Luis NWR Manager, USFWS (personal communication, June-2022)*

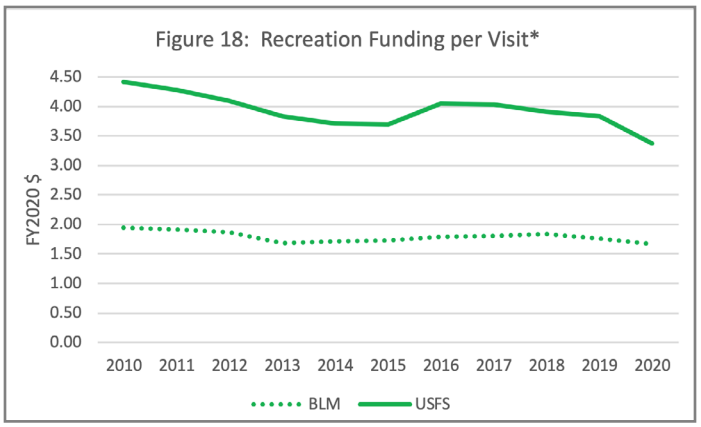
Migratory birds form massive winter congregations in the San Luis National Wildlife Refuge Complex. (Photo credit- Audubon California)

CASE STUDY #3 - *The 45,000-acre **San Luis National Wildlife Refuge Complex** (managed by USFWS) conserves the largest intact expanse of Central Valley wetlands and riparian woodlands. These exceedingly rare habitats once spanned hundreds of square miles throughout the Sacramento and San Joaquin valleys, serving as critical stop-overs for millions of migratory birds. In partnership with adjacent conservancy lands and easements, the Complex serves as a living laboratory of climate resiliency and the last best hope for the return of seasonal floodplain basins to the San Joaquin Valley. Within its boundaries are critical populations of listed and recovering species like riparian brush rabbit, riparian woodrat, Bell's Vireo, Central Valley Chinook salmon, and Aleutian cackling goose. The unit sees an estimated 140,000 annual visitors enjoying excellent opportunities for hiking, hunting, photography, and auto-touring. In late May of 2022, a rabbit within the refuge tested positive for rabbit hemorrhagic disease virus 2 (RHDV2), a devastating diagnosis requiring immediate ramp-up of trapping and vaccination efforts. Nutria, exotic-invasive burrowing rodents, have gained a foothold and require hands-on eradication, lest they undermine wetlands and eventually spread to the San Francisco Bay-Delta. Unfortunately, insufficient staffing has caused Sunday closures of the Refuge visitor center. Such demands on and threats to the Complex require investment in staffing to greatly expand visitor services, law enforcement, targeted species recovery, combatting invasive species, and active water-flow management.*



This aerial imagery depicts wetlands lost from Blackwater National Wildlife Refuge following 50 years of damage by nutria, an invasive burrowing rodent now common in the San Luis National Wildlife Refuge Complex. (Photo credit- USFWS)

Recreation dollars per visit offer a common metric by which to gauge and contrast each agency's and area's investment in providing a quality and sustainable recreation experience (Figure 18).



**Nationwide USFWS trends in Recreation dollars per visit are not depicted because dollars per visit is notably higher for the USFWS than for other agencies and thus obfuscate trends for other agencies. USFWS $/visit were $10.24 in FY2021, down 10% from $11.41 in FY2016.*

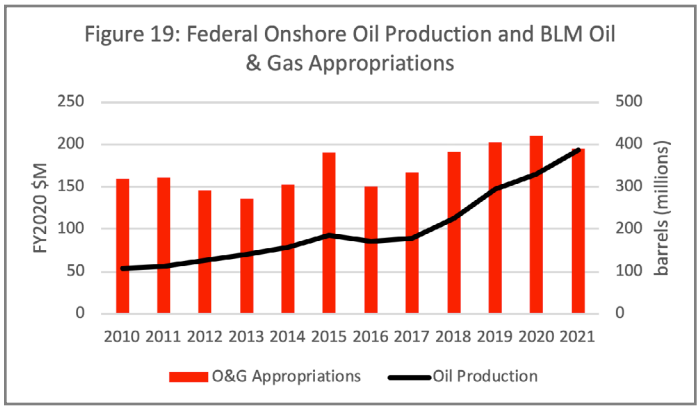
In FY2010, the USFS received far greater (more than twice as much) Recreation-related appropriations per visitor than did the BLM. However, USFS Recreation dollars per visit has declined by 25% in the last eleven years to $3.37 per visit.

Our analysis of Recreation funding clearly demonstrates that funding for budget line items designed to (a) provide recreation opportunities and facilities and (b) mitigate impacts of recreation activities on ecosystem health, wildlife habitat, water, and land resources is falling woefully behind ever-rising recreation pressures, particularly in light of the dramatic rise in recreation activity spurred by the COVID-19 pandemic.

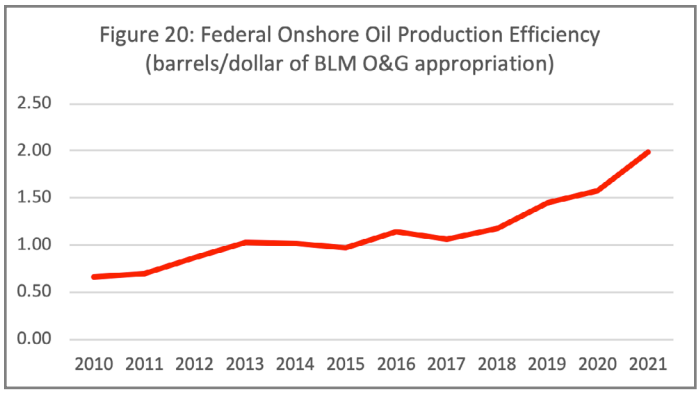
Although we refer to these deficits as Recreation budget deficits, they have real and significant impacts on ecosystem health, land health, water quality, fish, wildlife, and their habitats and thus have major impacts beyond Recreation.

4.2 OIL AND GAS PRODUCTION

Although Oil & Gas appropriations have increased somewhat since FY2010, the increases are minimal compared to the sharply increased federal onshore oil production.[10]



Because the vast majority of federal onshore oil production occurs on BLM lands, it is not surprising that production has increased in a pattern similar to that of BLM's Oil & Gas appropriations. However, oil production technology advances such as fracking, horizontal drilling, and multilateral drilling have caused production growth to surpass growth in appropriations. This trend is illustrated clearly in Figure 20.



In FY2010, each BLM Oil & Gas appropriated dollar (used for management, permit processing, inspections, abandoned well remediation, etc.) was associated with the production of two-thirds of a barrel of federal onshore oil. The rapid increase in oil production efficiency is apparent – by FY2021

10 In contrast to oil production that has more than tripled during the last twelve years, federal onshore gas production has decreased slightly.

production efficiency had tripled, and each BLM oil & gas appropriation dollar was associated with the production of two barrels of federal onshore oil.

Thus, as federal extraction funding increases, the production of oil increases even more rapidly, overwhelming regional conservation efforts. While it is unclear what percentage of public funding is dedicated to ensuring the inspection, enforcement, bonding, and reclamation necessary to protect public interests (e.g., royalty revenues, lowest possible greenhouse gas emissions, full restoration of ecological function on reclaimed areas, and cleanup of abandoned and orphan wells), it is clear that oil and gas funds for protecting public interests are not keeping pace with escalating oil production.

4.3 LIVESTOCK GRAZING

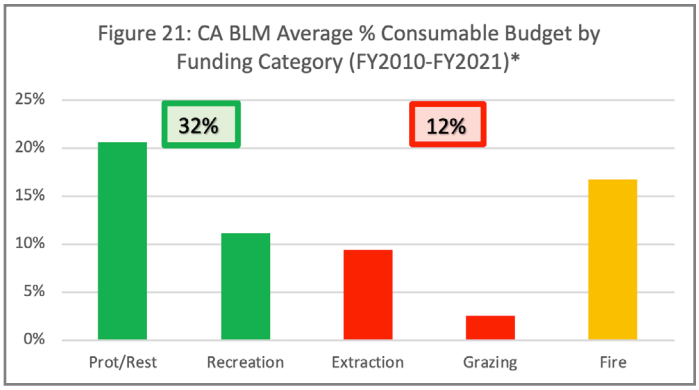
Commercial livestock grazing is ubiquitous on BLM lands, as almost two-thirds of all BLM lands (or approximately 155 million acres) have permitted or leased grazing allotments. Recent research[11] examined the quality and sustainability of flora, fauna, habitat, waterways, and soil on BLM grazing allotments to determine rangeland health, or land health standards (LHS). More than 50% of BLM grazing allotments assessed, or approximately 54 million acres, received a failing health grade due primarily to livestock grazing. With BLM's livestock grazing appropriations increasing by 13% from FY2010 to FY2021 on BLM lands, it is clear that existing levels of funding and management are not producing improvement in range conditions. Current publicly accessible data and trends call into question the sustainability of BLM's existing grazing program.

5. REGIONAL APPLICATION: CALIFORNIA BLM STATE-LEVEL FUNDING

The BLM California State Office provided consumable budget data, which includes carryover.[12] The inclusion of carryover should be considered when examining funding trends and when comparing the California BLM budget to the national BLM budget.

Funding for the California BLM State Office rose 3% between FY2010 and FY2021, from $262 to $270 million. Even though funding information for the BLM California State Office includes Fire dollars, their total funding experienced the same minimal growth as the national BLM budget (which doesn't include Fire dollars). If Fire dollars are removed, the California BLM budget *decreased* 7%.

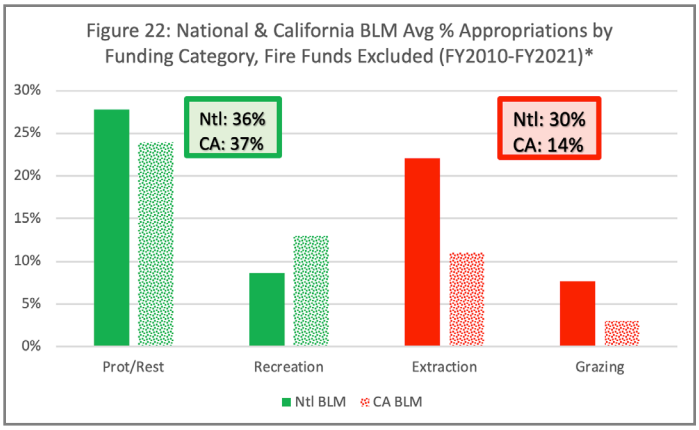
The following graph (Figure 21) depicts the average percent of appropriations in each funding category for the BLM California State Office. To provide State-level budget information in a format more comparable to the national BLM budget, we provide graphs of the California BLM budget both with and without Fire funding included.



**Amounts do not add to 100% due to the exclusion of the Renewable Energy (3%) and Other funding categories. The Other category comprises 37% of the California BLM budget and includes budget items such as general overhead and administration, rights of way, and land and realty management.*

11 Rangeland Health and BLM Grazing Programs. 2022. PEER Technical Research. Available at: https://peer.org/agency-records-paint-bleak-picture-of-western-landscape/.

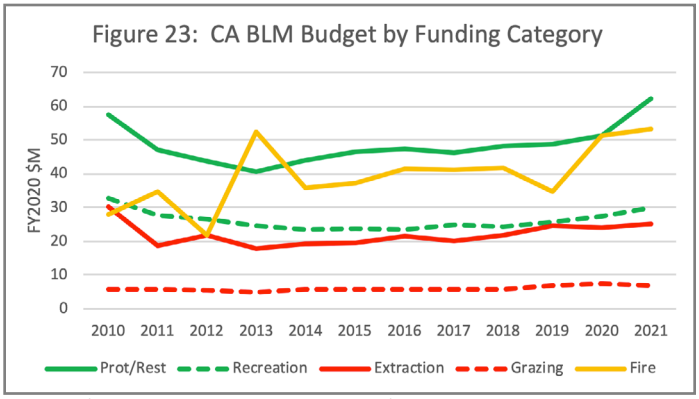
12 Although efforts were made to isolate new funding and omit carryover, data maintained by the California BLM State Office do not allow for this.



Amounts do not add to 100% due to the exclusion of the RenewableEnergy (4%) and Other funding categories. With Fire excluded from the California BLM budget the Other category (which includes budget items such as general overhead and administration, rights of way, and land and realty management) comprises 44% of the California BLM budget.

The California BLM and national BLM budgets have similar portions earmarked for Conservation (comprising Protection/Restoration and Recreation), though Recreation is something that receives proportionately more funding in California than nationally. In contrast, and relative to the national BLM budget, the California BLM State Office has a notably smaller portion of its budget designated for Extraction & Grazing (even with Fire funding excluded).

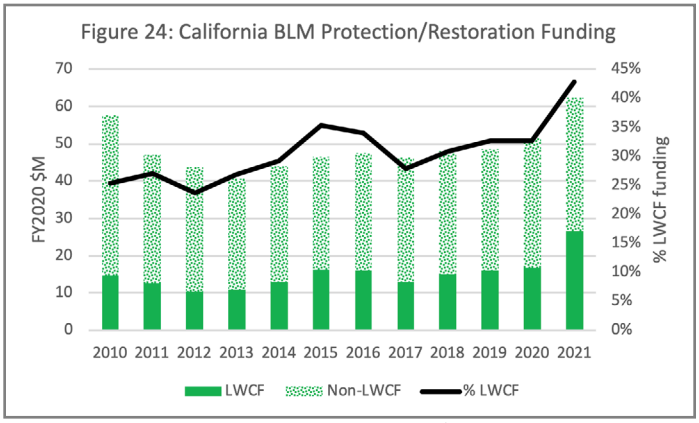
Figure 23 illustrates changes in funding priorities for the California BLM.



Funding for activities such as transportation, facilities, land surveys, administration, and construction (which we categorize as Other) is at least twice that of any other category. We omit Other from the graph so that trends in the categories of interest may be more readily perceived. The FY2012 dip and the FY2013 spike in Fire funding result from changes in funding for suppression operations.

Not surprisingly, growth in the Fire budget has far outstripped growth in the various categories; the Fire budget has increased by 91% ($25M) since FY2010. Protection/Restoration has also experienced an increase in funding; in FY2021 Protection/Restoration funding was $4M higher than in FY2010. Since the total budget for the CA BLM Office has increased only $8.2 million during this timeframe, clearly other budget areas have experienced cuts. Appropriations for both Extraction and Grazing have declined by 17% although funding for Other has declined by the largest dollar amount ($17.6M).

Additional details pertaining to Protection/Restoration funding are provided in Figure 24, which presents details regarding trends in the portion of Protection/Restoration funding derived from the LWCF Program.



** In FY2021 the BLM California State Office received $9.8 million in Great American Outdoors Act (GAOA) funding. We have included the $9.8M as LWCF funds to capture the portion of conservation funds stemming from resource extraction activities.*

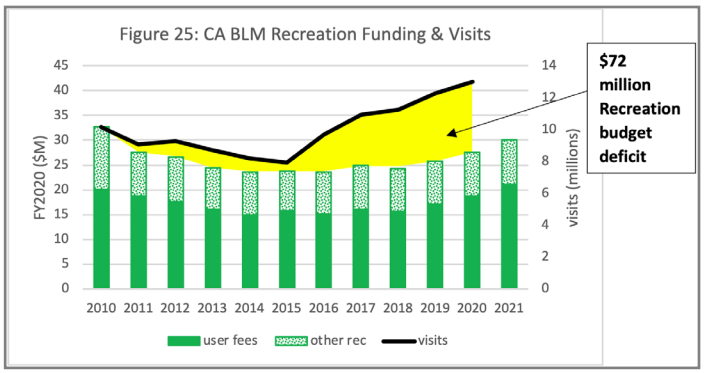
In comparison to the national BLM, a far greater portion of the California BLM's Protection/Restoration funding stems from the LWCF Program; between FY2010 and FY2021 LWCF funding on average constituted 7% of the national BLM budget but 31% of the California BLM budget. The portion of California BLM Protection/Restoration funding derived from the LWCF Program has increased over time; non-LWCF Protection/Restoration funding declined 17% between FY2010 and FY2021, while LWCF Protection/Restoration funding increased 83%.[13]

As is true at the national level, Grazing is a small component of the California BLM budget – only 3% of funds are earmarked for Grazing-related activ-

13 Much of the increase in LWCF funding occurred in FY2021 with the passage of the Great American Outdoors Act; between FY2010 and FY2020 California BLM's LWCF funding had increased only 15%.

ities. In contrast to the national BLM Extraction budget that is more heavily focused on Oil & Gas, the BLM California Office Extraction budget is more heavily focused on Minerals.[14]

California BLM Recreation funding declined by almost a third between FY2010 and FY2016, but has since recovered to nearly FY2010 levels (Figure 25). User fees constitute a strikingly large portion of the BLM California State Office's Recreation budget – in FY2021 a full 70% of Recreation funding was derived from users. An Off-Highway Vehicle (OHV) grant obtained from the State of California accounts for this marked difference in CA BLM Recreation funding. The grant is obtained from the Off-Highway Motor Vehicle Recreation Division of the California State Parks Department, funded by OHV users' Green Stickers, and is intended to help agencies and organizations provide well-managed OHV recreation opportunities.[15]



Federal funding for California BLM Recreation declined markedly between FY2010 and FY2011 but has subsequently held relatively constant.[16] Recreation fees have fluctuated over time but have generally increased such that in FY2021 they were 40% higher than in FY2010. Recreation fees are in fact the only component of the Recreation budget that was higher in FY2021 than in FY2010; the OHV grant and federal funds were respectively 13% and 28% lower than in FY2010. In total, the Recreation budget has declined by $3M since FY2010; although recreation user fees have increased, they have not kept pace with the declines in federal and OHV grant funding.

Like trends occurring on the nation's USFS lands, California's BLM lands have also experienced increasing visitation but decreasing Recreation funding. Visitation increased 28% between FY2010 and FY2020, while Recreation funding decreased 16%, creating a large Recreation funding deficit – between FY2010 and FY2020 the BLM California State Office accrued a $72 million Recreation funding deficit (Figure 25). As noted above in our discussion of agencies' national budgets, Recreation budget deficits have real and significant impacts on ecosystem health, land health, water quality, and fish, wildlife, and their habitats and thus should not be considered to impact only Recreation.

Recreation dollars per visit offers a common metric by which to gauge investment in providing a quality and sustainable recreation experience. On a per-visitor basis, California BLM lands have 66% more funding per-visit than the national BLM average, though this is due to the Off-Highway Vehicle grant; when this grant is excluded from our analysis the CA BLM Recreation funding per visit is more in line with the national BLM dollars/visit.

14 In FY2010 Minerals funding was nearly three times higher than Oil & Gas funding but declined markedly in FY2011 when funding for the remediation of abandoned mines dramatically declined. Given this decline in Minerals funding and the recent rise in Oil & Gas funding, Minerals funding levels are now approximately only 30% higher than those for Oil & Gas.

15 More information about California's Off-Highway Motor Vehicle Recreation Division Grant Program is available here: http://ohv.parks.ca.gov/?page_id=1164.

16 Much of the decline is the result of a change in the California BLM financial system, when a deferred trail maintenance BLI was apparently combined with other accounts that are not included in the Recreation budget.

6. FINDINGS OF CONCERN

A number of the funding trends identified in this research are concerning, particularly for public lands conservation funding.

- Funding for ***wildfire management*** is critical, but in many cases appears to be competing with (and substituting for) basic conservation and recreation funding, particularly for the USFS but also for the California BLM budgets. The startling decline in conservation funding for the USFS is for both recreation and activities focused on protecting and restoring ecosystems. Recreation management and ecosystem protection and restoration must not be seen as optional, as these agency functions not only prevent wildfire ignitions, but can mitigate the effects of both active fires and fire suppression efforts.
- Over the last decade, ***increasing visitation*** and recreational use of public lands has vastly outpaced recreation funding. Maintaining USFS per-visit recreation funding at its FY2010 level would have required an additional $814 million in appropriations between FY2011 and FY2020. Similarly, if BLM per-visit recreation funding maintained its 2010 ratio until now, an additional $114 million would have been appropriated. For the USFWS from 2016 until now, $370 million of additional appropriations would have been required. While previous per-visit funding levels for recreation were likely insufficient to varying degrees for each of the three agencies, we know that there is now much less spending per public lands visit than just a decade ago. The rapidly decreasing ratio of recreation appropriations to visits correlates with greater resource damage from recreationists and a decreasing quality of recreational experience.
- While funding for conservation activities on BLM lands has slowly increased, funding for ***extraction and grazing*** on BLM lands has increased somewhat faster. Research has shown that the degradation of large areas of BLM lands, primarily from extractive activities such as oil development[17] and livestock grazing,[18] likely means that current conservation funding is insufficient to overcome multiple use-based land degradation, much less help the landscape adapt to external pressures. For example, oil production on BLM lands has dramatically increased per unit of funding; whereas in FY2010 one dollar of Oil and Gas BLM funding resulted in two-thirds of a barrel of oil production, in FY2021 one dollar of Oil and Gas BLM funding resulted in two barrels of produced oil. One way to view this is that the BLM has increased oil and gas leasing and permitting efficiency, but the unfortunate truth is that many of these lands are degrading at a faster rate.
- A large portion of conservation funding for public lands comes from ***the LWCF[19] and the Great American Outdoor Act's (GAOA) Legacy Restoration Fund***, which are funded primarily through oil and gas development on public lands and waters. LWCF funding became even greater with the passage of the Dingell Act in 2019 and the GAOA in 2020, which permanently authorized up to $900 million annually from offshore oil and gas lease revenues. These guaranteed acquisition dollars are important but cannot be seen as a substitute for robust funding for conservation and recreation operations and maintenance.
- Recreation funding is experiencing an increase in ***dependence on recreation user fees.*** User fees are a helpful form of conservation funding. Unfortunately, user fees are increasing while general appropriations for recreation are decreasing. Increasing recreation user fees also reduces the accessibility of public lands.

17 Morton, P., Kerkvliet, J., & Hjerpe, E. (2022). Impact Fees, Bonding Reform, and Oil and Gas Development. *Colo. Env't LJ*, *33*, 103.

18 Rangeland Health and BLM Grazing Programs. 2022. PEER Technical Research. Available at: https://peer.org/agency-records-paint-bleak-picture-of-western-landscape/.

19 For a detailed primer on LWCF, please see: https://www.rff.org/publications/explainers/land-and-water-conservation-fund-101/.

7. RECOMMENDATIONS FOR CONSERVATION FUNDING ON PUBLIC LANDS

Pressures on public lands are rapidly increasing, while funding for conservation is rapidly decreasing for many public lands. Although some public lands are experiencing stagnant or very small increases in conservation funding, they still are unable to keep up with the ever-growing visitation and use levels. Years of neglect, in the form of too little funding for land protection and recreation management, are snowballing and are severely compromising the ecological integrity and recreational enjoyment of U.S. public lands.

Beyond increasing visitation, there are numerous challenges that are collectively stressing public lands such as climate change, wildfires, and resource degradation and pollution from extractive industries. Increasing fossil fuel production on public lands is contributing to greater climate change impacts through greater emissions, leading to a negative feedback loop that includes more extensive wildfire severity and damages. Widespread livestock grazing on arid Western public lands is also clearly leading to greater resource degradation.[20] Mitigation attempts such as range improvements and plugging abandoned wells have thus far been inadequate to solve the problems, much less keep up with increasing extraction and grazing on public lands.

Additional funds are clearly needed for conservation on public lands. This can be addressed within a "multiple-use" management perspective and must be done within an "ecosystem management" perspective. Funds for recreation management and restoration of lands are also critical for rural economic development. Given that outdoor recreation is more sustainable than traditional extractive industries,[21] it makes sense to promote increased funding for public land recreation, conservation, and restoration.

20 Rangeland Health and BLM Grazing Programs. 2022. PEER Technical Research. Available at: https://peer.org/agency-records-paint-bleak-picture-of-western-landscape/.

21 Hjerpe, E. E. (2018). Outdoor recreation as a sustainable export industry: A case study of the boundary waters wilderness. *Ecological Economics*, *146*, 60-68.

7.1 FUTURE TRENDS AND RESEARCH

Recent developments in funding for public lands have shown promise in at least providing small improvements at addressing the extreme backlog of deferred maintenance, recreation funding deficits, and inadequate funding for ecosystem protection and restoration. GAOA[22] in 2020 and the recent Bipartisan Infrastructure Law[23] (BIL) in late 2021 contain numerous conservation provisions that will have positive effects on federal lands and its users. Initial GAOA increases in funding were captured in our FY2021 budget analyses, but it remains to be seen if GAOA and BIL will lead to overall increases in conservation funding on public lands. While small improvements in conservation funding may be happening now, the overall backlog of conservation funding and the ever-increasing stressors on public lands require massive new investments to simply maintain the current quality of public lands and its uses.

In terms of actionable and simple activities that can be undertaken to facilitate greater public and decision maker awareness of federal lands funding trends, we have a few recommendations:

- We recommend further investigation of our primary findings by nonpartisan federal research agencies such as the Government Accountability Office (GAO), the Congressional Research Service (CRS), or the Congressional Budget Office (CBO).
- Specifically, we recommend increased independent auditing that examines potential substitution effects between rapidly increasing wildfire management funds and rapidly decreasing conservation funding for the USFS, escalating visitation to public lands, changes in dependency of conservation funding on LWCF funds, and patterns in user fees for various users.
- Recommendations for federal land agency budgeting processes include consistent and comparable budgeting criteria across agencies (BLM, NPS, USFS, USFWS), the need for greater transparency,

22 Available at: https://www.congress.gov/bill/116th-congress/house-bill/1957.

23 Available at: https://www.whitehouse.gov/bipartisan-infrastructure-law/.

and a dedicated budgeting office with liaisons who can help the public access data and understand trends. Public reporting processes that reinforce accountability for on-the-ground outcomes would be especially impactful.

- Agency budgeting accountability can be improved by including concise summary tables in every agency Budget Justification that illustrate comparisons to previous years. For example, only some USFS Budget Justifications include summary tables. This would facilitate comparisons and trend analysis of funding for public lands.
- Finally, Budget Justification data and trends should be provided to the public in usable spreadsheet formats, alongside the PDF documents that are currently the primary means of conveying budget information.

APPENDIX A. METHODS

Differences between the funding datasets analyzed for the BLM, USFS, and USFWS have implications for the feasibility of analyses and comparisons. Information regarding agencies' funding at the national level was obtained from annual budget justifications,[24] which contain appropriations and, in the case of the BLM, comprehensive full-time equivalent (FTE) employment information for agency programs. Whenever possible we obtained *actual* appropriations values from Budget Justifications, although in some instances only *enacted* amounts were available. Funding information for the BLM California State Office was obtained from personnel at the State Office.

One significant difference between the USFS, BLM, and USFWS national budgets is that while the USFS receives wildland fire appropriations directly from Congress, the BLM and USFWS do not. Rather, wildland fire appropriations are made to the Department of the Interior (DOI), which in turn allocates funds to BLM, USFWS, National Park Service, and the Bureau of Indian Affairs. The USFS Budget Justifications therefore contain appropriations details regarding wildland fire dollars, whereas the BLM and USFWS Budget Justifications do not. Our analysis of the agencies' national budgets reflects this difference. However, because datasets obtained from the California BLM State Office included wildland fire funds allocated to them by the BLM Washington Office, our state-level analysis included wildland fire funding.

Our analysis of USFWS budget trends is notably different from that of either the BLM or USFS budget. The Fish and Wildlife Service is more conservation-oriented than either the BLM or the USFS,[25] and the conservation focus of the USFWS is reflected in its Budget Justifications documents and the appropriations provided to the USFWS; the USFWS Budget Justifications have minimal discussion of oil & gas, timber, grazing, or other extractive activities, and no budget line items (BLIs) are focused on extraction. We therefore conducted a truncated analysis of the USFWS budget and only examined trends in recreation funding. Visitation data for USFWS were only available back to FY2016 leading us to restrict our USFWS budget and visitation analyses to the years ranging from FY2016 to FY2021.

Another notable difference in our analysis of the various budgets reflects a difference in the reporting of full-time equivalents (FTE)[26] data. Whereas our analysis of the BLM national budgets considers both funding and FTE levels, our analysis of all other budgets addresses funding levels only. This stems from the fact that the BLM Budget Justifications provide sufficient detail to allow for analysis of both funding and FTE levels, but neither the USFS nor the USFWS Budget Justifications provide sufficient detail.[27]

In our programmatic classification of BLIs, some BLIs were excluded from the national USFS and BLM budgets. Because our analysis of agencies' national budgets is intended to assess trends in funding avail-

24 All agency Budget Justifications are available online. BLM: https://www.blm.gov/learn/blm-library. USFS: https://www.fs.usda.gov/about-agency/budget-performance. FWS: https://www.fws.gov/budget/.

25 The BLM and USFS are more multi-use oriented than the USFWS – whereas the missions of both the BLM and USFS refer to sustaining the land's health, diversity, and productivity, the mission of the USFWS refers to conserving, protecting, and enhancing fish, wildlife, and plants and their habitats.

26 Total FTEs for a program or agency are the total of all relevant employees' FTEs, where a full-time employee has an FTE of 1.0, while a half-time employee has an FTE of 0.5.

27 More specifically, although USFS and USFWS Budget Justifications provide FTE information, the information is sometimes provided at the program level rather than the BLI-level.

able for nationwide management of agency lands, we excluded BLIs containing funds designated for a particular state or states. Two examples are the USFS National Forest System program for the Quinalt Special Management Area (located in Washington) and the BLM's Oregon and California Grant Lands program. Also excluded are BLIs containing offsetting receipts (such as BLM's APD Offsetting Collections Fees).

BLIs were categorized into seven funding categories (Protection/Restoration, Recreation, Renewable Energy, Extraction, Grazing, Fire, and Other) according to the guidelines detailed below. The full list of BLI categorization for each agency is available for review here: https://www.conservationecon.org/public-lands.

Protection/Restoration: Line items related to the management, protection, and restoration of land, soil, water, riparian areas, habitat, wildlife, and cultural resources; wild horse and burro management; and Wilderness, National Monuments, & National Conservation Areas. An example budget line item included in Protection/Restoration: BLM's Repair of Damaged Lands, a program which is responsible for inventorying, assessing, monitoring, and managing riparian areas and wetlands.

Recreation: BLIs pertaining to recreation management programs, recreation fees, and trails work. Example BLI included in Recreation: USFS's Recreation R&D program.

Renewable Energy: BLIs pertaining to geothermal, wind, solar, and other forms of renewable energy. Example BLI included in Renewable Energy: BLM's Renewable Energy program.

Extraction: Programs relating to the extraction of oil and gas, timber, minerals, or helium. Example BLI included in Extraction: the USFS's Manage Geologic Resources & Hazards program.

Grazing: Grazing and range management programs. Example BLI: all budget line items within BLM's Range Improvements Account.

Fire: Line items pertaining to fire prevention, suppression, management, and fuels reductions (e.g., one-third of the USFS Collaborative Forest Landscape Restoration Program (CFLRP) was allocated to Fire). Example BLI: USFS's Wildland Fire & Fuels R&D.

Other: Any BLIs spanning multiple purposes are categorized as Other. For example, BLIs pertaining to transportation, facilities, land surveys, administration, construction, roads, and information technology. Also categorized as Other are payments made to states or counties (state/county shares of oil and gas royalties, grazing fees, etc.) that are in turn used for education, roads, etc. Additionally, there have been numerous supplemental disaster relief appropriations made for addressing the aftermath of wildfires and/or hurricanes. When funds for addressing wildfires *and* hurricanes are appropriated in the same BLI the BLI is categorized as Other. Example BLI: all budget line items associated with USFS's Land Ownership Management program.

Because the specifics and structure of each budget are somewhat different, we provide additional details for each budget below.

A1: BLM NATIONAL BUDGET

BLM appropriations data were obtained for FY2010-FY2021. Budget line items pertaining to the following were excluded from our analysis of national BLM funding and FTE trends:

1. State-specific funds - Because our interest is in funding trends for *nationwide* programs, not programs aimed at a particular state, we omit funding for state-specific programs. One exception to this are BLIs containing funding for the National Petroleum Reserve. Although these funds are directed to Alaska, the program is of national importance and is thus *not* excluded from our analysis.
2. Offsetting collections are excluded, which results in our analysis more accurately reflect-

ing how dollars are spent.[28]

3. The helium program experienced a significant shift after FY2014. Prior to that time BLM was selling large amounts of helium and the resulting collected funds were appropriated for the purposes of paying back the helium debt. After the final debt payment was made in FY2014, BLM's sales of helium (and therefore associated appropriations) dramatically reduced.[29] The helium program thus has a misleading impact on BLM's budget, in particular on the extraction portion of the budget. We therefore exclude the helium program from our analysis.
4. The BLM national budget includes numerous dollar values listed within square brackets, the meaning of which is unclear and undocumented, and attempts to ascertain the meaning of the square brackets were unsuccessful. Amounts in square brackets are not included in totals provided in BLM budget justifications. We therefore exclude these amounts from our analyses.

After these exclusions are made, all remaining budget line items were categorized into six funding categories: Protection/Restoration, Recreation, Renewable Energy, Grazing, Extraction, and Other.

BLIs categorized into each budget category are listed in supplementary tables provided online.[30] Note that the Department of the Interior (DOI) submits separate budget justifications for wildfire funding for DOI federal land management agencies, and thus none of the BLM wildfire dollars are included in our analysis.

A2: USFS NATIONAL BUDGET

USFS FY2010-FY2020 appropriations data were extracted from USFS Budget Justifications. As with the BLM national budget, we omit funding for state-specific programs in order to focus our analysis on trends in funding for *nationwide* programs, not programs designed for a particular state.

Appropriations associated with the USFS CFLRP BLI were evenly divided between three funding categories – Protection/Restoration, Extraction, and Fire. We opted to take this approach to account for the fact that the CFLRP is responsible for quality forest restoration work but is also associated with significant extraction through mechanical thinning and timber sales and is a primary wildfire management tool.

A3: USFWS NATIONAL BUDGET

No budget line items are excluded from the data pulled from the USFWS Budget Justifications. However, because our analysis of the USFWS budget was truncated to solely assess Recreation trends, BLIs are categorized to Recreation and Non-Recreation funding categories only.

A4: BLM CALIFORNIA STATE OFFICE BUDGET

The BLM California State Office provided consumable budget data, where consumable budgets reflect both new funding and carryover. Although our analysis of the national budget does not include Fire dollars (since wildland fire details are not provided in the BLM Budget Justifications), Fire funding data were included in the data provided to us by the BLM California State Office and are therefore included in our State-level analysis.

28 For example, in FY2017 the BLM was appropriated $2M for Communications Site Management, but also collected $2M in offsetting fees. If offsetting fees were not excluded from our analysis, it would appear that the BLM did receive appropriations for the Communications Site Management program.

29 Information on the BLM's helium program can be found here: https://www.blm.gov/congressional-testimony/air-blms-disappearing-helium-program.

30 Available here: https://www.conservationecon.org/public-lands.