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DEPARTMENT OF FISH AND WILDLIFE
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August 31, 2023

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SUBJECT: NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE LICENSING OF COMMERCIAL CANNABIS CULTIVATION IN MENDOCINO COUNTY

Dear Angela McIntire-Abbott:

The California Department of Fish and Wildlife (Department) has reviewed the Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the Licensing of Commercial Cannabis Cultivation in Mendocino County (Project; State Clearinghouse Number 2023080049). The NOP was prepared pursuant to the California Environmental Quality Act (CEQA). The Department received the NOP from the Department of Cannabis Control (DCC) on August 2, 2023.

The Department has jurisdiction over the conservation, protection and management of fish, wildlife, native plants and their habitat. The Department is California's Trustee Agency for fish and wildlife resources and holds those resources in trust by statute for all the people of the State. (Fish and Game Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a).) The Department, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. (Id., § 1802.) Similarly, for purposes of CEQA, the Department is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

The Department is also submitting comments as a Responsible Agency under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.) The Department expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to the Department's lake and streambed alteration regulatory authority. (Fish and Game Code, § 1600 et seq.) Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish and Game Code, § 2050 et seq.), the project proponent may seek related take authorization as provided by the Fish and Game Code.

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Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project the Department, by law, may be required to carry out or approve through the exercise of its own regulatory authority under Fish and Game Code.

The Department continues to support efforts to effectively regulate cannabis cultivation, and to address its numerous and substantial environmental impacts. The Department believes that greater regulatory oversight and enforcement by Lead Agencies, including Mendocino County, can help minimize the environmental impacts of cannabis cultivation.

Environmental Baseline

As outlined in CEQA section 15002(a), one basic purpose of CEQA is to inform governmental decision makers and the public about the potential, significant environmental effects of *proposed* activities. Unlike a typical CEQA review process, preparation and review of the DEIR for licensing of cannabis cultivation in Mendocino County will primarily address environmental impacts “after-the-fact.”

Proposition 64 asked the State to create strict environmental regulations and ensure full compliance with environmental laws (section 2 (F)). In addition, each site must comply with CEQA and conduct environmental review of proposed projects. The County of Mendocino (County) adopted a Mitigated Negative Declaration under CEQA for its Cannabis Cultivation Regulations¹ (ordinance) in April 2017. Many cannabis cultivation sites that submitted an application pursuant to the 2017 regulation have been allowed to continue to operate prior to the issuance of a County permit.

The NOP states that DCC has issued approximately 608 provisional commercial cannabis cultivation licenses in Mendocino County. Most of these provisionally-licensed sites submitted an application for a local permit under the County’s 2017 ordinance. Applications submitted under Phase 1 of the County’s 2017 ordinance, which make up the majority of sites with provisional DCC licenses, were required to demonstrate that cannabis cultivation existed prior to January 1, 2016. The County’s Mitigated Negative Declaration defined the baseline as August 26, 2016, the date on which the County submitted requests for early consultation to Responsible and Trustee agencies and other interested parties. The Department supports the use of an August 26, 2016 date for determining baseline conditions for the DEIR. This is the appropriate CEQA baseline for cannabis projects with cultivation that existed prior to adoption of the County ordinance, or with existing applications in the County’s cannabis regulatory program, and environmental analysis in the DEIR should reflect this date. **(Recommendation #1)**

¹ Mendocino County Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program for the Medical Cannabis Cultivation Regulation, adopted April 2017, State Clearinghouse number 2016112028.

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In May 2023, Mendocino County adopted amendments to the ordinance, and adopted an addendum to the 2017 Mitigated Negative Declaration relating to the County's cannabis regulation and permitting processes. The NOP states the DEIR prepared by DCC will "programmatically evaluate the environmental impacts of the DCC's annual licensing of cannabis cultivation operations in the county as well as the environmental impacts of future licensed commercial cannabis operations." To ensure the public and other agencies have the opportunity to comment effectively on the Project, the DEIR should explain, in detail, how the County and DCC processes, licenses and permits will be implemented in relationship to each other, and how they will interact with other existing permits and processes. (**Recommendation #2**)

Cumulative Impacts

Cumulative impacts must be addressed pursuant to CEQA section 15130. The NOP states the DEIR will address the cumulative environmental consequences of the proposed Project in combination with other closely related past, present, and reasonably foreseeable future projects in the area.

CEQA section 15355 defines cumulative impacts as "two or more individual effects which, when considered together, are considerable..." and may include "the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects." This section continues, "Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time."

The Department is concerned about cumulative impacts not only as they relate to licensed cannabis cultivation and associated development, but also unpermitted cannabis cultivation, and cannabis cultivation sites that have been abandoned without remediation. For example, Mendocino County has denied a number of local permit applications. Many cannabis cultivation properties in the permitting process were allowed to continue operations for years prior to permit denial. The DEIR should address unpermitted cultivation and abandoned sites, as well as cannabis cultivation sites that will ultimately receive an annual license with DCC.

Department staff have observed that cannabis cultivation properties in the County permitting process have often expanded development after the baseline date, but prior to review and permit issuance. This expansion of development includes measurable impacts which have not yet been analyzed. These impacts include tree removal, grading, development of infrastructure (e.g. roads and hoop houses), additional water diversion infrastructure (including surface diversions and groundwater wells), and other development related to expansion of cultivation and/or residential development on parcels with cannabis cultivation. Impacts from these past and present projects can be observed and measured using existing resources, and should be documented, quantified, analyzed and disclosed in the DEIR.

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The Department recommends the DEIR consider all cannabis cultivation sites when determining cumulative impacts of its licensing program in Mendocino County, including quantifying impacts that have occurred since the environmental baseline date.

(Recommendation #3)

Environmental Impacts

Documented environmental impacts of cannabis cultivation include habitat fragmentation, habitat loss through land clearing and conversion, reduction in instream flow, and delivery of sediment, nutrients, petroleum products, and pesticides to streams (Carah et al. 2015). Increased development in rural or previously undeveloped areas are a major concern to the Department and include road building, grading, pond construction, stream crossing construction, increased use of poorly maintained road systems, and hydrologic modification including rerouting of streams and interception of groundwater through poorly constructed road systems.

Wetlands may be directly impacted and permanently lost through development and conversion, and can be directly or indirectly impacted by hydrologic modification (CDFW 2014). State policy (Executive Order W-59-93) and Mendocino County policy (General Plan Resource Management Element Policy RM-29) each seek to achieve no net loss of wetlands. The DEIR should include measures to avoid or fully mitigate impacts to wetlands. **(Recommendation #4)**

Additional impacts Department staff have documented include degraded water quality, degraded habitat due to inappropriate location of development, development within riparian buffers, loss and degradation of wetland habitat, wildlife entanglement and mortality due to cultivation site hazards (e.g., plastic mesh), wildlife entrapment, fish passage barriers due to improperly designed water diversions and stream crossings, altered natural photoperiods from light pollution, and introduction of non-native species (fish and plants) resulting in predation of native species and degraded habitat quality.

Many of these impacts are unique to cannabis cultivation. Strategies to minimize and mitigate potentially significant environmental impacts should be fully considered and incorporated in the DEIR. These environmental impacts should be analyzed both individually and on a cumulative basis on a parcel, stream, watershed, and regional scale. **(Recommendation #5)**

Water Use and Availability

California has a Mediterranean climate, where most of the state's precipitation falls from October to May (CDFG 2003), not during the primary cannabis summer growing season. Due to the lack of summer rainfall and the absence of snow, rivers and streams have receding flow from May until September. Water use peaks in the heat of the

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summer at the same time instream flow is at its lowest, creating a conflict between water demand and water availability for fish and wildlife resources. The Department is concerned there is not adequate flow in most streams to meet the water demand for cannabis cultivation at its current levels, as well as the domestic water use for dwellings and other residential and commercial uses associated with or developed to facilitate cannabis cultivation and processing. Based on numerous field observations and ongoing research, the Department believes the overuse of surface water diversions for cannabis cultivation has and will continue to have a significant impact on aquatic resources.

The potentially significant impacts from the substantial alteration, and diversion and use of water from streams and rivers must be disclosed and analyzed in the DEIR. These environmental impacts should be analyzed both individually and on a cumulative basis on a parcel, stream, watershed, and regional scale. **(Recommendation #6)**

In addition, the Department has observed the construction and use of large ponds as a water storage method has increased in the County. In many cases, Mendocino County has allowed the construction of new ponds, which often involve substantial grading and fill, under a ministerial grading and/or pond exemption permit with no environmental review. These ponds may pose risks to water quality and sensitive habitats if they are designed and constructed without proper engineering. The Department has observed ponds built in inappropriate locations, and failed ponds that have delivered sediment to nearby streams. In addition, these ponds often provide breeding habitat for non-native, invasive species such as American bullfrog (*Lithobates catesbianus*), a species that preys upon native frogs such as the northern red-legged frog (*Rana aurora*) and foothill yellow-legged frog (*Rana boylei*), both California Species of Special Concern. The DEIR should provide a mechanism to regulate the development of ponds as part of cannabis cultivation permitting, including a requirement for engineered designs where appropriate, and invasive species management plans for all ponds. Ponds may be subject to the notification requirement in Fish and Game Code section 1602 et seq. if they are filled from, or outlet to, a stream or wetland.

(Recommendation #7)

Major watersheds, such as the Eel River, Mattole River, and Russian River watersheds, overlap with adjacent counties. Potential and existing impacts to those watersheds are not contained by county lines. Impacts should, therefore, be assessed at the watershed level, and should not be limited to impacts contained within County boundaries. The Department recommends the scope of the DEIR include impacts to these watersheds from cannabis cultivation located in Mendocino County. **(Recommendation #8)**.

Direct impacts to streams, riparian areas, wetlands

Many areas where cannabis cultivation may be permitted include agricultural and other areas within the 100-year floodplain. Floodplains are an important physical and

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biological component of riverine ecosystems. All rivers flood, and flooding is an expected and recurring event in natural river systems. Development in flood-prone areas disconnects rivers from their natural floodplains and displaces, fragments, and degrades important riparian habitat. Development in floodplains often eliminates benefits of natural flooding regimes such as deposition of river silt on valley floor soils and recharging of wetlands. In addition, braided channel structure, off-channel fish habitat, and backwaters are eliminated, resulting in higher velocity flows. These changes lower habitat suitability for salmonids, which need low-flow refugia to escape flood flows. Structures in flood plains are vulnerable to erosion and flood damage. Once structures are built and threatened by river flooding, property owners often seek to armor river banks or build or raise levees to prevent future property damage. Thus, not only does development displace riparian and floodplain habitat when it is built, it often results in further habitat and floodplain loss through additional development to protect structures.

Development and habitat conversion in floodplains results in degradation of riverine and riparian habitats, and negatively impacts the fish and wildlife species that depend on them. The Department recommends that placement of new permanent structures for cannabis cultivation within the 100-year floodplain of any stream or river is prohibited. **(Recommendation #9)**

Impacts of Night Lighting on Wildlife

Cannabis cultivation often includes the use of artificial lighting in hoopouses, and so-called “mixed-light” techniques to increase yields. The adverse ecological effects of artificial night lighting on terrestrial, aquatic, and marine resources such as fish, birds, mammals, and plants are well documented (Johnson and Klemens 2005, Longcore and Rich 2016, Rich and Longcore 2006). Some of these effects include altered migration patterns and reproductive and development rates, changes in singing behavior in bird species (Miller 2006), changes in foraging behavior and predator-prey interactions, altered natural community assemblages, phototaxis (attraction and movement towards light), disorientation, entrapment, and temporary blindness (Longcore and Rich 2004, Longcore and Rich 2016).

The Department has determined that light pollution disrupts the abilities of night-foraging birds (CDFG 2007). Artificial lighting impacts bat roosts, and Johnston et al. (2004) recommend that artificial lighting be directed away from bat roosts or possibly shaded by trees. Research on the effects of artificial lighting on salmonid populations indicate that increased light intensity appears to slow or stop out-migrating juvenile salmon and affects feeding patterns. Juvenile salmonids in the presence of increased artificial night lighting may be more vulnerable to predation (McDonald 1960, Patten 1971, Ginetz and Larkin 1976, Tabor et al. 2004). Because cannabis cultivation sites are commonly located in remote forested areas that would otherwise not be affected by night light pollution, and because these forested areas contain habitat for many

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organisms that are negatively impacted by light pollution, cultivation using artificial light on a landscape scale could have a significant impact on wildlife.

The Department recommends that if lighting is used for cultivation within structures, light should not be visible from outside the structure. DCC should ensure this condition is enforceable, and actively monitored for compliance. The use of automatic greenhouse covers should be mandated or encouraged to reduce the incidence of light pollution (**Recommendation #10**).

Impacts of Noise on Wildlife

Diesel and gasoline-powered electric generators are a common fixture of indoor and outdoor cannabis cultivation sites. Electric generators can produce considerable air and noise pollution. The effects of noise pollution on wildlife include disrupting communication between individuals, affecting predator-prey relationships and foraging efficiency, and habitat selection and bird nesting density (Barber et al. 2009; Francis and Barber 2013).

On a watershed scale, the chronic noise pollution from numerous cannabis cultivation site generators has the potential to result in substantial habitat loss or degradation to a number of wildlife species. Generator-produced noise pollution can be especially harmful to night-foraging animals such as owls and bats, which hunt for prey primarily through hearing. The State- and federally-threatened northern spotted owl (*Strix occidentalis*), for instance, occurs in forested coastal Mendocino County and is vulnerable to nighttime generator noise impacts.

Impacts to bats from noise are another specific concern. Populations of many bat species across North America and globally are declining. Approximately fifteen percent of the global bat fauna are listed as threatened by the International Union for Conservation of Nature (IUCN). However, a greater number of species (about 18%) are listed by the IUCN as “data deficient,” meaning there is a lack of studies that can be used to support assessments of conservation status (Voigt and Kingston 2016). This decline has numerous causes, but habitat loss and degradation are principal contributors. Bats have been shown to avoid areas with chronic noise (Schaub et al. 2008) and the foraging success of certain bat species is reduced by chronic noise (Siemers and Schaub 2011).

In conjunction with the other habitat fragmentation, degradation, and disturbance-related impacts of outdoor cannabis cultivation already mentioned, both night light pollution and chronic generator-induced noise impacts may contribute to landscape-scale wildlife habitat declines and may have individual and cumulative significant impacts.

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Based upon the information above, the Department recommends the DEIR include an analysis of potential night light pollution and chronic noise exposure impacts to wildlife, and effective avoidance, minimization and/or mitigation strategies.

(Recommendation #11)

Impacts to Listed Species

Mendocino County is known to support several species listed or candidate under the California Endangered Species Act (CESA, Fish and Game Code section 2050 et seq.). Specifically, Coho Salmon (*Oncorhynchus kisutch*), Summer Steelhead (*O. Mykiss*), and Northern Spotted Owl (*Strix occidentalis caurina*) are present in areas where cannabis cultivation occurs. Cannabis cultivation activities detailed above have the potential to cause “take” of and impacts to these listed species. Take of species of plants or animals listed as endangered or threatened under the California Endangered Species Act (CESA) is unlawful unless authorized by the Department with an Incidental Take Permit. The DEIR should state whether the Project could result in any incidental take of any CESA-listed species. DCC should adequately analyze potential impacts and include avoidance, minimization and mitigation measures to avoid or mitigate impacts in the DEIR. **(Recommendation #12)** For Coho Salmon and Summer Steelhead, cumulative impacts from surface water diversion are a particular concern.

General Comments

Effectiveness of Mitigation Measures

Mendocino County’s Cannabis Regulations have been in effect since April 2017. The Department is concerned the County’s existing regulatory framework has not been effective in avoiding, minimizing and/or mitigating the environmental impacts of cannabis cultivation. Pursuant to CEQA section 15002, the DEIR must disclose and evaluate all of the project’s potentially significant impacts; identify ways to avoid or significantly reduce environmental damage; propose, as appropriate, feasible and effective mitigations for those impacts; and disclose reasons for approving the proposed project if significant environmental impacts will occur. In addition, pursuant to CEQA section 15126.4(a)(2), mitigation measures must be fully enforceable through permit conditions, agreements, or other legally binding instruments.

The DEIR should include an analysis of the effectiveness of mitigation measures under the current program in avoiding, minimizing or reducing the environmental impacts of cannabis cultivation sites, particularly if the same or similar mitigation measures are proposed for use in the DCC’s licensing program **(Recommendation #13)**.

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Fish and Game Code

Several Fish and Game Code sections apply to activities associated with cannabis cultivation. Fish and Game Code section 1602 et seq. requires notification for diversions of water from a surface water source, or of water hydrologically connected to a surface water source (e.g. offset wells), as well as for physical changes to the bed, channel or bank of any river, stream, or lake. State licensing through DCC requires that all cultivators obtain either a Lake or Streambed Alteration Agreement (LSAA) pursuant to FGC section 1602, or verification from the Department stating that an LSAA is not required.

Department staff have documented increased observations of unpermitted non-native aquatic species introductions to ponds used for water storage and water diversion associated with cannabis cultivation. Fish and Game Code section 6400 requires first submitting for inspection and securing a stocking permit from the Department before planting fish. The Department recommends the Project prohibit the introduction of non-native species to ponds, and DCC should address the potential environmental impacts from existing non-native species in the DEIR. (**Recommendation #14**)

DCC staff and/or license applicants should consult with the Department to ensure compliance with all FGC sections. Examples of other applicable FGC sections include but are not limited to section 2050 et seq. CESA section 5650 (prohibits water pollution), section 5652 (prohibits refuse disposal in or near streams), and section 5937 (requires sufficient water bypass and fish passage, relating to dams).

Summary of Recommendations

In summary, the Department provides the following recommendations:

1. The Department supports the use of an August 26, 2016 date for determining baseline conditions for the DEIR. This is the appropriate CEQA baseline for cannabis projects with cultivation that existed prior to adoption of the County ordinance, or with existing applications in the County's cannabis regulatory program, and environmental analysis in the DEIR should reflect this date.
2. To ensure the public and other agencies have the opportunity to comment effectively on the Project, the DEIR should explain, in detail, how the County and DCC processes, licenses and permits will be implemented in relationship to each other, and how they will interact with other existing permits and processes..
3. The Department recommends the DEIR consider all cannabis cultivation sites when determining cumulative impacts of its licensing program in Mendocino

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County, including quantifying impacts that have occurred since the environmental baseline date.


4. The DEIR should include measures to avoid or fully mitigate impacts to wetlands.
5. Strategies to minimize and mitigate potentially significant environmental impacts should be fully considered and incorporated in the DEIR. These environmental impacts should be analyzed both individually and on a cumulative basis on a parcel, stream, watershed, and regional scale
6. The potentially significant impacts from the substantial alteration, and diversion and use of water from streams and rivers must be disclosed and analyzed in the DEIR. These environmental impacts should be analyzed both individually and on a cumulative basis on a parcel, stream, watershed, and regional scale.
7. The DEIR should provide a mechanism to regulate the development of ponds as part of cannabis cultivation permitting, including a requirement for engineered designs where appropriate, and invasive species management plans for all ponds. Ponds may be subject to the notification requirement in Fish and Game Code section 1602 et seq. if they are filled from, or outlet to a stream or wetland.
8. The Department recommends the scope of the DEIR include impacts to these watersheds from cannabis cultivation located in Mendocino County.
9. The Department recommends that placement of new permanent structures for cannabis cultivation within the 100-year floodplain of any stream or river is prohibited.
10. The Department recommends that if lighting is used for cultivation within structures, light should not be visible from outside the structure. DCC should ensure this condition is enforceable, and actively monitored for compliance. The use of automatic greenhouse covers should be mandated or encouraged to reduce the incidence of light pollution
11. The Department recommends the DEIR include an analysis of potential night light pollution and chronic noise exposure impacts to wildlife, and effective avoidance, minimization and/or mitigation strategies.
12. The DEIR should state whether the Project could result in incidental take of any CESA-listed species. DCC should adequately analyze potential impacts and include avoidance, minimization and mitigation measures to avoid take and mitigate all direct and indirect impacts in the DEIR.

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13. The DEIR should include an analysis of the effectiveness of mitigation measures under the current program in avoiding, minimizing or reducing the environmental impacts of cannabis cultivation sites, particularly if the same or similar mitigation measures are proposed for use in the DCC's licensing program.
14. The Department recommends the Project prohibit the introduction of non-native species to ponds, and DCC should address the potential environmental impacts from existing non-native species in the DEIR.

We appreciate the opportunity to comment on the Project and look forward to working with the DCC to support the regulation of commercial cannabis cultivation while protecting the fish and wildlife resources held in trust for all Californians. The Department is available for consultation during all stages of the CEQA process, to share information related to fish and wildlife resources, and discuss potential impacts and proposed mitigation. If you have any questions or would like to request a meeting please contact Senior Environmental Scientist (Supervisor) Angela Liebenberg at ceqareferrals@wildlife.ca.gov.

Sincerely,

DocuSigned by:

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References

- Barber, J.R., K.R. Crooks, and K.M. Fristrup. 2009. The costs of chronic noise exposure for terrestrial organisms. *Trends in Ecology and Evolution* 25:180-189.
- California Department of Fish and Game . 2003. *Atlas of the Biodiversity of California*. Sacramento, CA.
- California Department of Fish and Game. 2007. *California wildlife: conservation challenges*. California Department of Fish and Game, Sacramento, CA.
- California Department of Fish and Wildlife. 2014. *Development, Land Use, and Climate Change Impacts on Wetland and Riparian Habitats – A Summary of Scientifically Supported Conservation Strategies, Mitigation Measures, and Best Management Practices*. Northern Region, Eureka, CA.
- Carah, J., J. Howard, S. Thompson, A. Gianotti, S. Bauer, S. Carlson, D. Dralle, M. Gabriel, L. Hulette, B. Johnson, C. Knight, S. Kupferberg, S. Martin, R. Naylor, M. Power. 2015. High Time for Conservation: Adding the Environment to the Debate on Marijuana Liberalization. *BioScience*. Doi: 10.1093/biosci/biv083
- Francis, C.D. and J.R. Barber 2013. A Framework for Understanding Noise Impacts on Wildlife: An Urgent Conservation Priority. *Frontiers in Ecology and the Environment* 11:305–313.
- Ginetz, R.M. and Larkin P.A. 1976. Factors affecting rainbow trout (*Salmo gairdneri*) predation on migrant fry of sockeye salmon (*Oncorhynchus nerka*). *Journal of Fisheries Research Board of Canada* 33:19-24.
- Johnston, D., G. Tatarian, and E. Pierson. 2004. *California bat mitigation techniques, solutions, and effectiveness*. Prepared by H.T. Harvey and Associates for the California Department of Transportation, Sacramento, CA. Project No. 2394-01.
- Longcore, T., and C. Rich. 2016. *Artificial night lighting and protected lands: Ecological effects and management approaches*. Natural Resource Report NPS/NRSS/NSNS/NRR 2016/1213. National Park Service, Fort Collins, Colorado.
- Longcore, T., and C. Rich. 2004. Ecological light pollution. *Frontiers in Ecology and the Environment* 2:191-198.

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- McDonald, J. 1960. The behavior of Pacific salmon fry during their downstream migration to freshwater and saltwater nursery areas. *Journal of Fisheries Research Board of Canada* 17:655-676.
- Miller, M.W. 2006. Apparent effects of light pollution on singing behavior of American robins. *The Condor* 108:130-139.
- Patten, B. 1971. Increased predation by the torrent sculpin, *Cottus rhotheus*, on coho salmon fry, *Oncorhynchus kisutch*, during moonlight nights. *Journal of Fisheries Research Board of Canada* 28:1352-1354.
- Rich, C. and T. Longcore. 2006. *Ecological consequences of artificial night lighting*. Island Press, Washington, D.C.
- Schaub, A., J. Ostwald, and B.M. Siemers. 2008. Foraging bats avoid noise. *Journal of Experimental Biology* 211:3174-3180.
- Siemers, B.M. and A. Schuab. 2011. Hunting at the highway: traffic noise reduces foraging efficiency in acoustic predators. *Proceedings of the Royal Society B* 278:1646-1652.
- Tabor, R.A., Brown G.S., and V.T. Luiting. 2004. The effect of light intensity on sockeye salmon fry migratory behavior and predation by cottids in the Cedar River, Washington. *North American Journal of Fisheries Management* 24:128-145.
- Voigt, C.C. and T. Kingston. 2016. *Bats in the Anthropocene: conservation of bats in a changing world*. Springer International AG, Cham.