

Adverse Impacts to Marbled Murrelet

Unrealistic Assigned Avoidance Probabilities: Wind Turbine Collision Risk Model and "Take" Estimates

The DEIR's sloppy handling of the Marbled Murrelet modeling and presumptive and premature estimates of "Take" provide excellent example of CDFW's criticisms of the Draft environmental analysis.

"Radar data collected during pre-Project surveys indicate that "take, of murrelet is likely due to collisions with Project turbines as birds travel through the Project area between inland old-growth forest nesting sites and nearshore ocean foraging areas."

Because of its unique life-history and old-growth forest nesting habitat requirements, it is extremely difficult to fully mitigate take pursuant to CESA for this State Endangered species.

"A collision risk model is necessary to create an estimate of the number of murrelets that could be killed or injured by collision with turbines and other Project components."

Currently, the Project has two collision risk reports. The first is included in the DEIR as Appendix O (*Biological Resources: Marbled Murrelet Collision Risk Assessment Associated with the Humboldt Wind Project Proposed for Humboldt County, California, November 2018*).

"However, this document has been replaced by a new Collision Risk Assessment Report that was provided to CDFW and United States Fish and Wildlife Service (USFWS) on April 15, 2019 and was not included in the DEIR."

"CDFW is not yet confident with the model inputs nor with either collision risk modeling approach or the resulting take estimates. Additional model refinement may be needed, and this may result in a significantly higher take estimate than the 20.86 murrelets calculated in the DEIR."

"The 20.86 murrelet take estimate was developed by doubling the original model output to account for potential interannual variation in murrelet occurrence at the site, in part because the models utilize only one year of radar monitoring data that has been collected thus far (DEIR Appendix O), despite CDFW's recommended *two years* of murrelet surveys." (CDFW 2018).

"This 20.86 murrelet take estimate is substantially different from the take estimate in the *"Biological Resources: Humboldt Wind Energy Project Bird and Bat Conservation Strategy"* (DEIR Appendix S), which states, " ... *the anticipated level of take is set conservatively at 15 marbled murrelets over 30 years of project operation.*"

The factor that most strongly influences the models' collision risk and take estimate is the avoidance probability. The collision risk models assign an avoidance probability of 0.98 (DEIR Appendix O) and 0.997 (April 15 Report, not in DEIR), respectively.

These assigned avoidance probabilities assume that murrelets flying through the proposed Project site would avoid colliding with wind turbines 98 percent or 99.7 percent of the time.

"The model detailed in DEIR Appendix O also included a lower avoidance probability (0.95) for April only *"with the presumption that inbound birds could include naive, first-year birds that may be naive to turbines or other structures."*

"The avoidance probabilities used in the DEIR and April 15 Report models were based on studies primarily conducted at *offshore* wind facilities.

Most of these studies focused on avoidance behaviors of *species that have different wing-loading and flight patterns* than murrelets."

"Further, the Project area is unique in that it experiences frequent fog and *low cloud ceiling conditions, which increases risk of bird collisions* (Aschwanden et al. 2018)."

- "United States Geological Survey data shows the Project site where turbines are proposed experiences an average of 9 - 10.5 hours of fog and low cloud ceiling conditions per 24-hour period during summer." (Torregrosa et al. 2016).
- "Data summaries from the National Weather Service Forecast Office in Eureka, CA, show that the weather station on Woodley Island recorded fog on an average of 161 days per year between 2013 and 2018 (data summaries available: <https://w2.weather.gov/climate/index.php?wfo=eka>)."
- "This is supported by information in the DEIR (DEIR Appendix L) which states that surveys conducted for the Project encountered *"moderate to heavy fog"* that *"periodically reduced visibility during 20 out of 59 survey-days."*

Thus, it is reasonable to assume that collision risk, for murrelets and birds generally, is likely substantially higher at this site than at other wind facilities that do not experience weather conditions frequently resulting in poor visibility.

"Reliance on data and comparing birds flying over open ocean to birds flying over the complex topography of forested ridgelines with fog and low cloud ceiling is questionable."

DFW explains in its DEIR comments how this 'questionable' presumption can skew the take analysis:

"The collision risk models used here are highly sensitive to changes in bird avoidance probabilities, thus any change in avoidance probability model inputs substantially affects the resulting take estimate." (CDFW 2019)

Setting the avoidance probability lower than 0.98 results in an almost *50 percent increase in the estimated number of murrelets that could collide with a turbine* for each 0.01 change in avoidance probability (DEIR Appendix 0).

For example,

- "the original model used an avoidance probability of 0.98 and determined that 10.43 murrelets would collide with turbines over the duration of the Project.
- If an avoidance probability of 0.97 is used, the take estimate would increase to 15.29 birds." (DEIR Appendix 0).
- "Using this approach, an avoidance probability of 0.90 results in projected take of **222 murrelets** over the project.
- Given that no information exists on murrelet avoidance of terrestrial wind turbines, the complex weather and topography at the Project site, and given that there have been documented collisions of murrelets with stationary anthropogenic structures such as powerlines (DEIR Biological Resources Chapter 3.5b page 3.5-77), the avoidance probability of 98 percent or higher is unsupported by adequate data."
- "The Draft Habitat Conservation Plan (HCP) for the Skookumchuck Wind Energy Project in Lewis County, WA, is **the only other wind energy project currently being developed in the range of murrelet**, and uses an avoidance probability of 0.75 during operational periods, and an avoidance probability of either 0.95 or 0.99 during periods when rotors are not turning either due to wind conditions or curtailment." (Chambers Group Inc. 2018).

Application of this currently employed, conservative avoidance probability (0.75) in the current model would yield a conclusion that essentially every murrelet flying through the operational area would eventually be killed.

CDFW recommends the DEIR should evaluate impacts using more realistic and conservative avoidance probabilities and associated take estimates.

"To propose measures that will be *"roughly proportional"* to the impacts of the taking (CEQA § 15126.4(a)(4)(B)), and minimize and fully mitigate (Fish &G. Code§ 2081 (b)(2)), the Project must provide a sound estimate of potential take."

"Further, CDFW cannot issue an Incidental Take Permit pursuant to Fish and Game Code section 2081(b) *"if issuance of the permit would jeopardize the continued existence of the species"* (Fish & G. Code§ 2081 (c)).

"A sound and supported take estimate is essential for CDFW to determine whether or not the Project may result in jeopardy of the murrelet."

**No Meaningful Mitigation Plan
Proposed for Marbled Murrelet**

The DEIR proposes to develop a mitigation plan that relies on a corvid management approach (killing or otherwise 'controlling' jays, crows and ravens) in Van Duzen County Park.

- where murrelet occupancy has **not** been established and
- where the strategy relies on a deterministic model to support the assumption that corvid management, applied there, would increase the murrelet population.

CDFW says:

"This proposed mitigation plan lacks specifics, meaningful performance standards, and does not contain sufficient detail to reasonably demonstrate proposed measures are capable of successful implementation and enforceable."

- The DEIR defers mitigation specifics until a future time, thus precluding meaningful public review and analysis required per CEQA.
- The DEIR states: *"Implementing [the marbled murrelet mitigation] plan would create as many as 103 marbled murrelets over the life of the project."*
- The DEIR (p 3.5-70) states this estimate (103 murrelets) was obtained via a *"deterministic model that was developed to calculate new breeding capable murrelets that could be added to the population if corvid management characteristic of other parks is implemented at Van Duzen County Park."*

However, the specific details of how the estimate was derived are not available for review because

In response to the DEIR, CDF&W says,

"neither information on the model, nor the murrelet mitigation plan, are included in the DEIR."

Further,

"There is no evidence to support that murrelets occupy and breed in Van Duzen County Park."

"Surveys conducted in 2001 documented sub-canopy flights and circling flights at three survey locations. The 2001 data does not provide adequate detail to conclude whether the Van Duzen County Park stands were occupied, or whether birds were merely in transit within the Van Duzen River corridor to adjacent habitat (McAllister 2019)."

"Surveys in 2018 found *"no evidence of occupancy of any of the [Van Duzen County Park] forest habitats,"* (McAllister 2019), although occupied behavior was detected at nearby Cheatham Grove, on California State Parks Property."

Further

"Surveys would be needed to determine whether murrelets breed in Van Duzen County Park in order to formulate a projected increase in murrelet production as a result of corvid management in the Van Duzen County Park."

"Although it is a reasonable *assumption* that corvid reduction could increase murrelet nest success where murrelets are known to breed, CDFW is not aware this effect has been demonstrated or quantified."

"Given these substantial uncertainties regarding the Van Duzen County Park as a mitigation site, the DEIR should evaluate and propose other feasible mitigation sites and substantially develop the murrelet mitigation plan prior to finalizing the Project's EIR to allow CDFW to evaluate whether the measures are *"capable of successful implementation"* (Fish & G. Code § 2081 (b)(2)).

The DEIR also proposes *"adaptive management actions to rectify a shortfall in production of sufficient marbled murrelets to offset take."*

CDFW says:

"The monitoring necessary to evaluate and ensure the effectiveness of this corvid management producing murrelets should also be evaluated for feasibility. This plan and the associated model that estimates the number of murrelets produced should be included in the DEIR for review."

The DEIR concludes that...

"given the uncertainty as to the feasibility and effectiveness of these compensatory mitigation and yet-to-be developed adaptive management measures, operational impacts on marbled murrelet would be significant and unavoidable."

Other feasible mitigation measures exist, but have not been incorporated into the Project.

For example, murrelets fly inland less frequently during the non-nesting season, and *shutting off wind turbines* (i.e., curtailment) during all or a portion of the nesting season is a potentially feasible mitigation measure to minimize murrelet collisions with turbines.

Additionally, habitat acquisition and preservation in perpetuity via conservation easements or other instruments may be a feasible mitigation measure that should be considered in the DEIR.

CDFW recommends the Project develop a murrelet mitigation plan for the impacts related to turbine construction and operation once there is a CDFW and USFWS *accepted collision take estimate*, and that information should be circulated for public review in the DEIR.

"The mitigation plan should propose fully enforceable and feasible mitigations that mitigate for the anticipated take of murrelet as well as a CDFW-accepted monitoring plan to assess its effectiveness."

Analyses Regarding Construction Impacts

Mitigation Measure 3.5-1a states: *"the project applicant shall prepare documentation depicting the location of marbled murrelet nesting habitat overlain with the construction footprint to confirm that construction activities would have no direct impacts on suitable marbled murrelet habitat."*

This analysis should be *included in the DEIR*. Because the DEIR includes no mapping or location information for murrelet habitat identified near the Project site, it is not possible to evaluate the results of the analysis or the potential Project impacts on murrelet habitat.

Mitigation measure 3.5-1 b states:

"During the marbled murrelet nesting season (March 24-September 15), the project applicant shall maintain a no-disturbance buffer between the construction activity and marbled murrelet nesting habitat as described below.

An exhibit showing the project improvements and marbled murrelet nesting habitat buffers shall be prepared demonstrating compliance with this mitigation measure. In the event the buffers cannot be maintained, an additional marbled murrelet shall be added to the compensatory mitigation required in Mitigation Measure 3. 5-2c."

The analysis of construction impacts on murrelet habitat should not be deferred. Without knowing the extent to which the Project may encroach upon murrelet nesting habitat and where, there is no way for the public, or anyone else, to ascertain whether compensating for *"an additional marbled murrelet"* is sufficient to fully mitigate potential take that could result from nest failure due to construction disturbance.

CDFW recommends the DEIR quantify and disclose the extent to which the Project will encroach upon murrelet nesting habitat and propose appropriate mitigation for potentially significant impacts.