

Bat Fatality Threshold Revision

Discussion of Final Recommendations
from the Altamont Pass Wind
Resource Area Technical Advisory
Committee

15 July 2022



Hoary Bat

Photo Credit: MICHAEL DURHAM/MINDEN PICTURES,
BAT CONSERVATION INTERNATIONAL



Photo Credit: MICHAEL DURHAM/MINDEN PICTURES
BAT CONSERVATION INTERNATIONAL

Goals and Expectations

Adaptive Management Goal:

- Minimize impacts to the greatest extent possible while maximizing energy production

PEIR/FEIR/SEIR/CUP Compliance

2010 Settlement Agreement Compliance



Silver-haired Bat

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Context

SEIR page 3.4-132

The PEIR noted that information available at the time indicated that **bat collision risk increases substantially when old-generation turbines are replaced by newer, larger turbines**, a finding corroborated by studies indicating that bat fatality rates increase with use of taller turbines.

SEIR page 3.4-129

[Improved fatality detection in bats] is somewhat more complicated in that the trend over time for repowered projects in the APWRA is to install larger, taller wind turbines. Such turbines pose an intrinsically greater risk to bats compared to nonrepowered or smaller, shorter repowered turbines (Alameda Community Development Department 2014; Barclay et al. 2007; Hein and Schirmacher 2016), so **more recent projects might have higher bat fatality rates as well as having higher fatality detection rates.**



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Adaptive Management Triggers and Modification

Mitigation Measure BIO-12d (PEIR) and 4.3.1.2 Bat (PEIR Attachment A-1).

If post-construction fatality monitoring results in a point estimate for the bat fatality rate that exceeds the 1.679 fatalities/MW/year threshold by a statistically significant amount, then, in consultation with the TAC, **Bat ADMM-7 and Bat ADMM-8** (described below) will be implemented.

2020 Updated PEIR Mitigation Measure BIO-14d (SEIR):

If ADMM-7 is not successful in reducing bat fatalities to below threshold levels (3.207 fatalities/MW/year), ADMM-8 or ADMM-9 will be implemented **within a timeframe sufficient to allow the measures to take effect in the first fall migration season following the year of monitoring in which the adaptive management threshold was crossed.**

Mitigation Measure BIO-14d (PEIR and SEIR):

ADMMs may be modified by the County in consultation with the TAC to take into account current research, site-specific data, and the most effective impact reduction strategies.



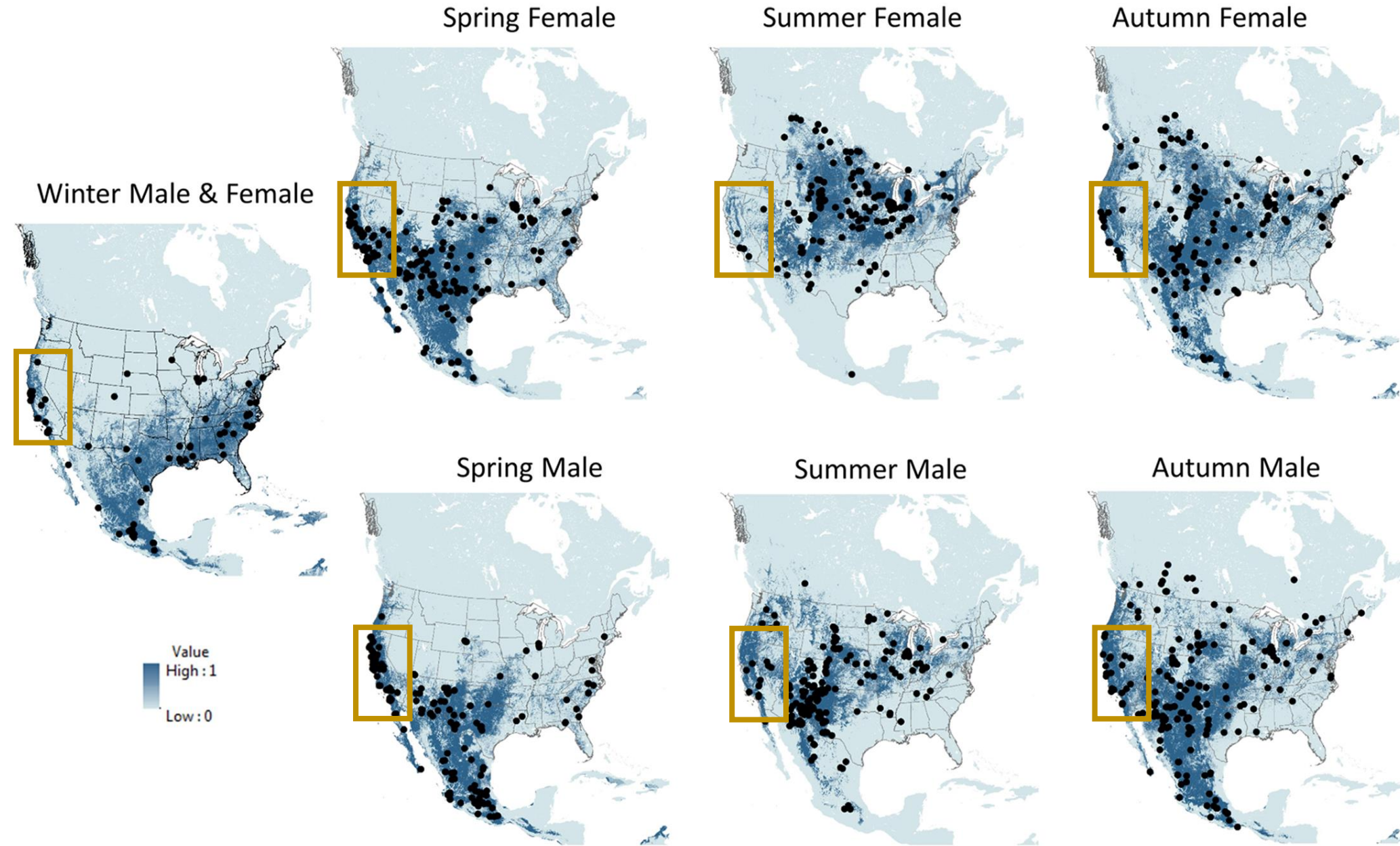
Hoary Bat

Photo Credit: MICHAEL DURHAM/MINDEN PICTURES,
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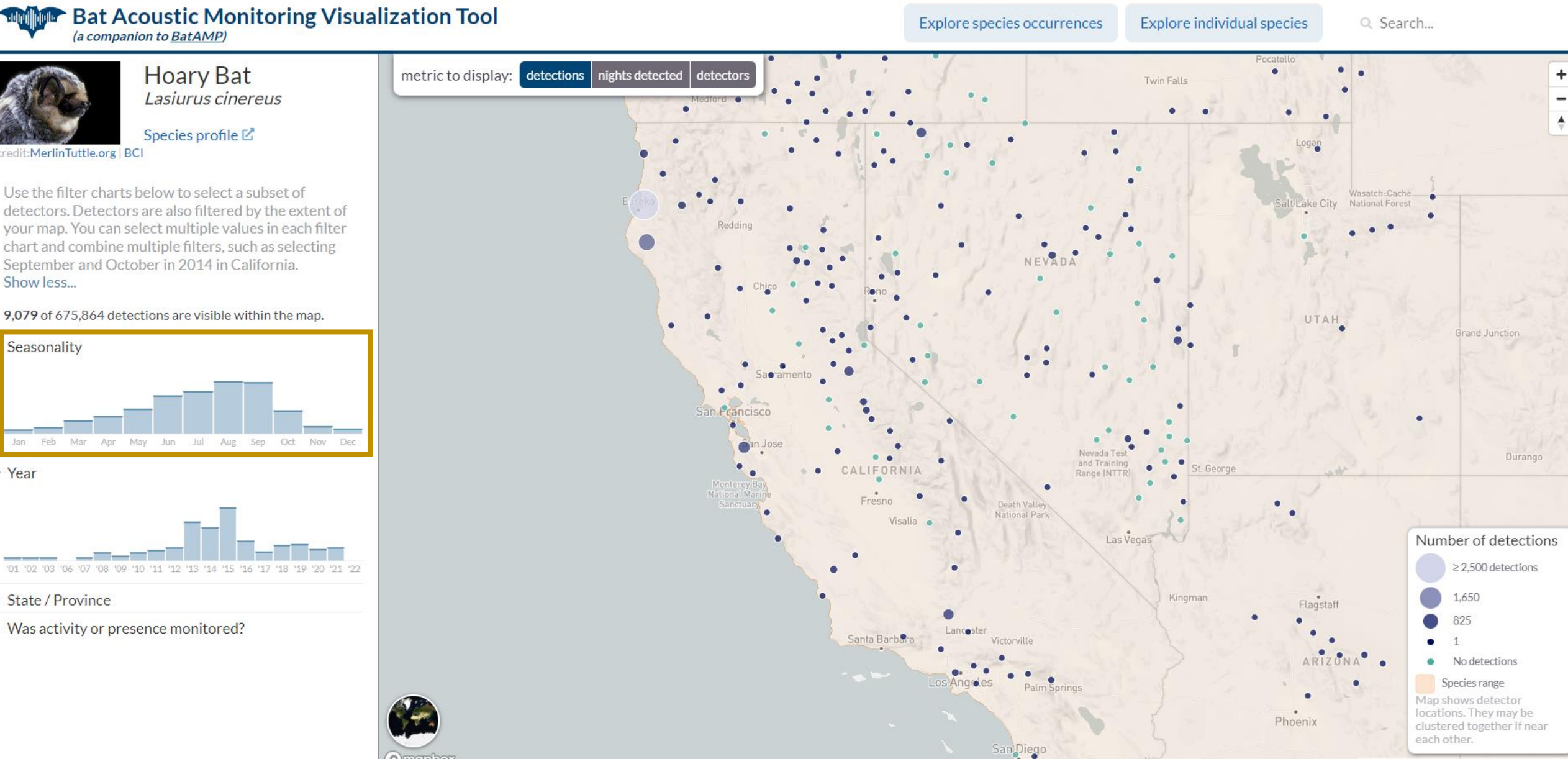
Response Summary

1. Uncertainty around population estimate and fatality estimates
2. Uncertainty around threshold and variable species composition at each site
3. Better quality surveys yield higher fatality estimates
4. Comparability of fatality estimates within and outside of APWRA
5. Local impacts to a region-wide population
6. Feasibility and cost restrictions
7. CEQA, not CESA

Seasonal Occurrence Patterns



Seasonal Occurrence Patterns

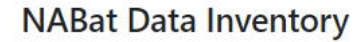


NABat **NORTH AMERICAN
BAT MONITORING PROGRAM**

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4,527 Cell(s)

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Filter 

Covariate by Species

Stationary Acoustic (Manual ID)

Survey Effort By Week

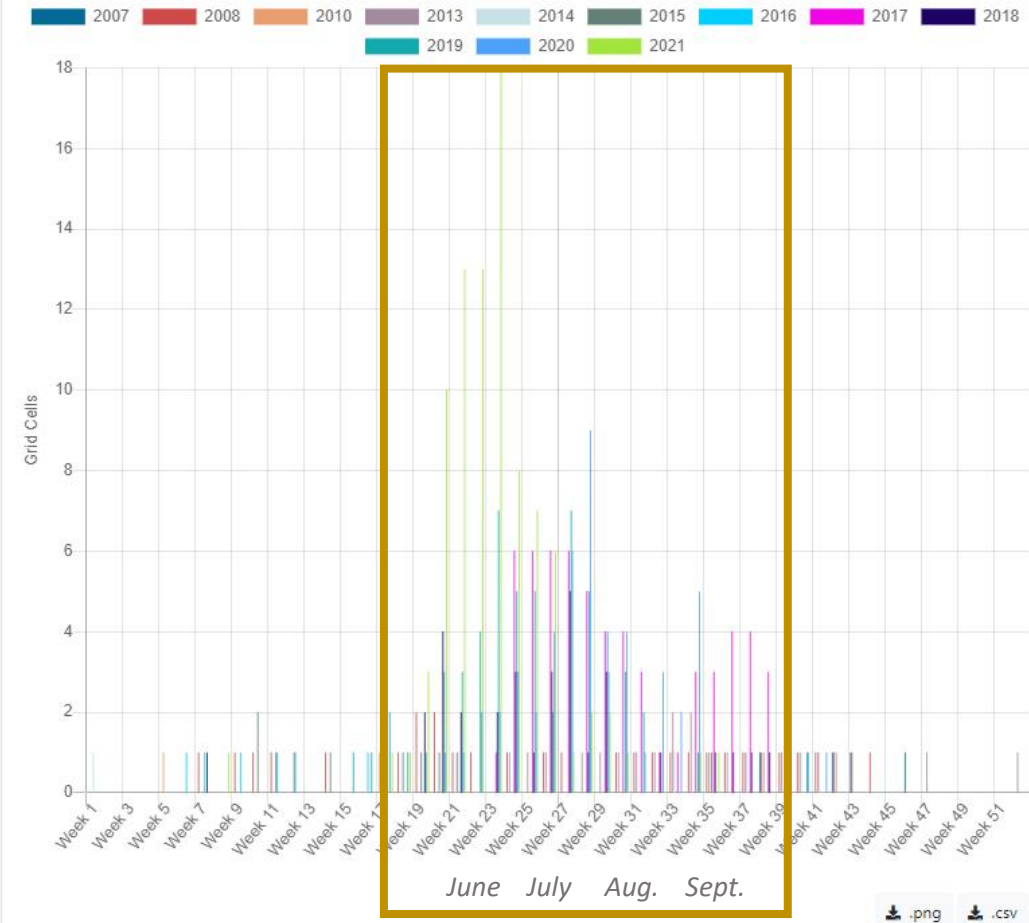


Figure from NABat Program (2022)

Other Available Data

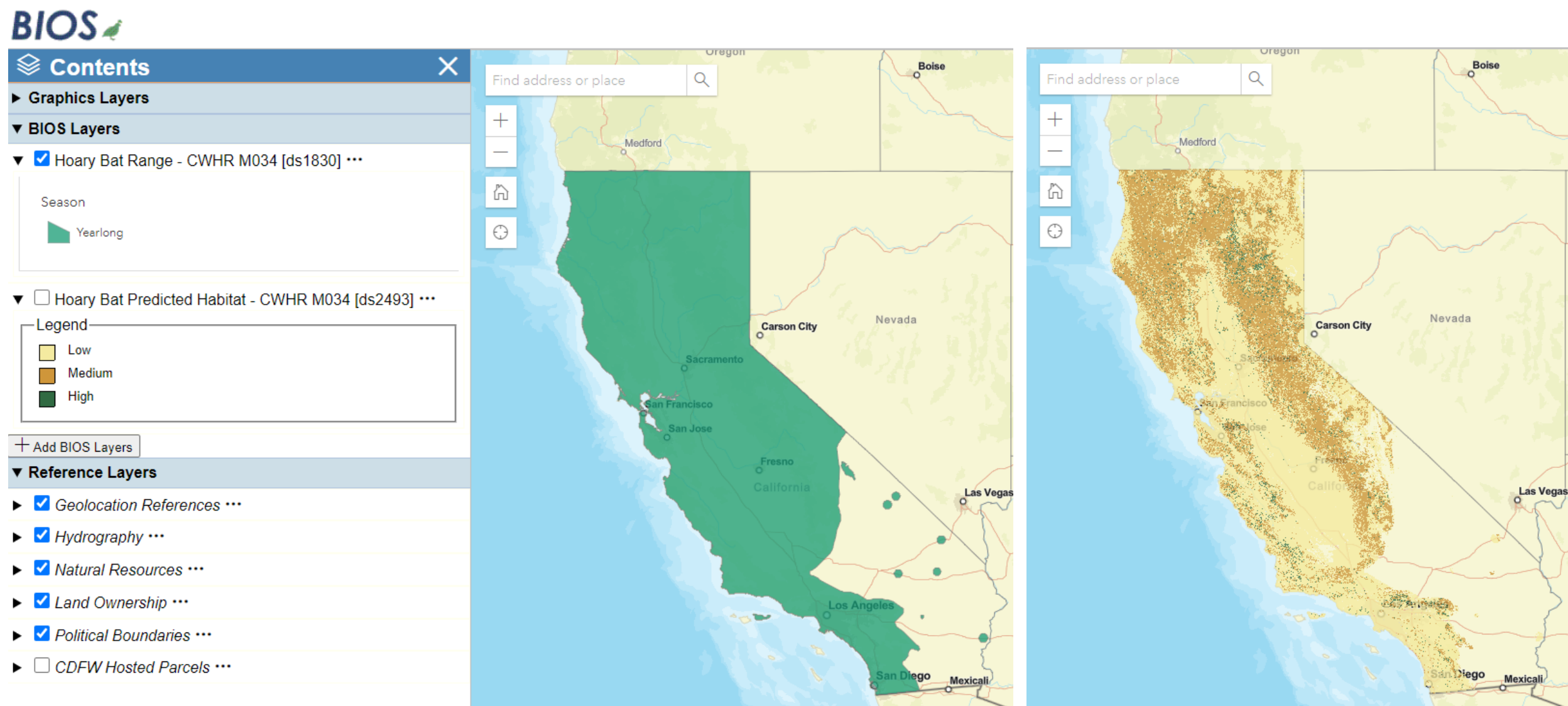


Figure from BIOS CWHR (2022)



Research to Reduce Uncertainty

Population Demographics and Movement Patterns

- What is the sex ratio of hoary bats being killed in the Altamont?
- Where are the hoary bats being killed in the Altamont coming from and going to?
- What is the distribution of hoary bats in California?
- What are the seasonal occupancy and habitat use patterns of hoary bats in California?

Wind Patterns and Bat Activity

- What are the environmental conditions (wind speed, temperature) and temporal patterns (time of night, time of year) associated with hoary bat fatalities?



Opportunities

Population Demographics and Movement Patterns

- USGS and North American Bat Monitoring Program
 - Existing research programs
- Renewable Energy Wildlife Institute, Electric Power Research Institute, Bats and Wind Energy Cooperative
 - Can help with scopes of work, grant applications, finding additional funds, etc.

Wind Regime and On-site Bat Activity

- APWRA Operators
 - Environmental conditions (wind speed, temperature) and temporal patterns (time of night, time of year) associated with hoary bat fatalities



Hoary Bat

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ADMM-7

Seasonal Turbine Cut-in Speed Increase

PEIR: The Project may request exceptions to cut-in speed increases for particular weather events or wind patterns **if substantial evidence** is available from onsite acoustic or other monitoring to support such exceptions (**i.e.**, all available literature **and onsite surveys** indicate that bat activity ceases during specific weather events or other predictable conditions)

SEIR: the project proponent **may request** modifications to the initial operational requirements, including ... **to implement a smart curtailment** operations regime. The project proponent **must present evidence in support of such changes**, including evidence from fatality monitoring during the first three years of project monitoring, acoustic survey or other **evidence documenting bat activity during the migration season**, and such other evidence as the project proponent deems relevant.



Hoary Bat

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ADMM-8 (PEIR)/9 (SEIR)

Emerging Technology as Mitigation

Examples of emerging technologies and research areas that could be incorporated in adaptive management plans are:

The use of altitude-specific radar, night vision and/or other technology allowing bat use monitoring and assessment of at-risk bat behavior **if research in these areas advances sufficiently to allow effective application of these technologies.**

Application of emerging peer-reviewed studies on bat biology (**such as studies documenting migratory corridors or bat behavior in relation to turbines**) that support specific mitigation methods.



2010 Settlement Agreement

“Post-construction monitoring shall include collecting field data on behavior, utilization and distribution patterns of affected avian and bat species in addition to fatalities.” (Agmt, para. 5.1, first full para.)

Some mitigation funds were used for:

- *research on fatality estimates, evaluating shorter search intervals and use of dogs*
- *an opportunistic study assessing effectiveness of complete curtailment at inoperable turbines (Smallwood and Bell 2020 JWM)*
- *behavior observed with FLIR infrared video camera compared to fatality rates (Smallwood and Bell 2020 MDPI)*



2010 Settlement Agreement

“Next Era Wind also **will conduct** bird and **bat utilization and behavior studies**, in consultation with the TAC ..., **for each phase of repowering** in order to inform and update siting analyses for each subsequent phase of [repowering] **and for any other future repowering efforts.**”
(Agmt, para. 5.1, second full para.)

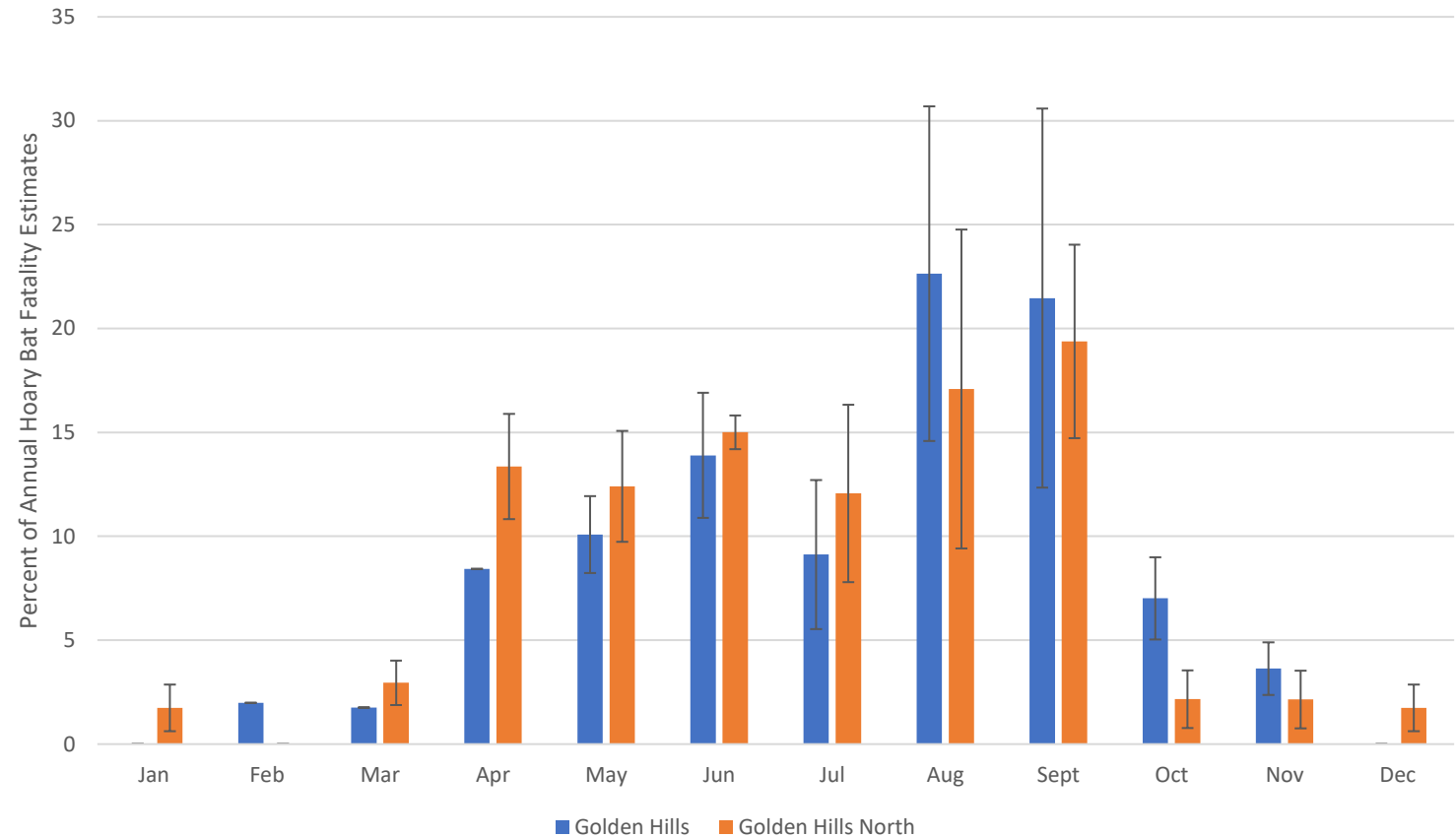
Current opportunity to comply with and inform adaptive management at Golden Hills, Golden Hills North, and Vasco Winds



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Seasonal Fatality Patterns



Calculated from the entire 3-year post-construction monitoring periods at Golden Hills (2016-2019) and Golden Hills North (2018-2021).



Adjust Seasonal Curtailment Recommendation

- Sunset to sunrise
- Four-month period between May 1 and September 30
- Specific timeframe adding up to four months to be determined by the Proponent

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Current Fatality Rate Estimates

Project	Years Monitored	Mean (95% CI) All Bat Fatalities/MW/Year	Mean (95% CI) Hoary Bat Fatalities/MW/Year	Mean Hoary Bat Fatalities/Year
Golden Hills	2016–2019	5.55 (5.15–5.95)	2.54 (1.44–8.29)	218
Golden Hills North	2018–2020	8.88 (6.36–11.40)	1.39 (0.68–2.10)	64

