

Pacific Biodiversity Institute

*Conserving our rich biological heritage with
science and compassion for people and nature*

November 25, 2011

Emily Garber
Lower Sonoran- Sonoran Desert Resource Management Plan
Phoenix District – Bureau of Land Management
21605 North 7th Ave
Phoenix, Arizona 85027



RE: Comments on the Sonoran Desert National Monument Draft Resource Management Plan and Draft Environmental Impact Statement (DRMP/DEIS)

Dear Ms. Garber,

Pacific Biodiversity Institute (PBI), where I have served as Executive Director since 1998, was contracted through The Nature Conservancy (TNC) by Bureau of Land Management (BLM) to conduct a series of studies regarding the ecological conditions of the Sonoran Desert National Monument ("Monument"). I worked on the Monument between 2002 and 2006 and co-authored six reports for the BLM pertaining to natural communities, ecological conditions and the effects of livestock grazing and other disturbance factors. I worked to ensure that PBI's data and reports were of the highest quality and that the conclusions therein were of the highest integrity and based on the best science. As such, I am shocked and upset by BLM's erroneous conclusions in the draft management plan, compatibility determination, and land health evaluation that ignores, mischaracterizes, or misattributes data and analyses.

I am also disappointed that the BLM has failed to provide accurate and thorough information to the public in the DRMP/DEIS and associated maps and data. The BLM does not reference in the DRMP/DEIS most of the research reports that PBI conducted on the SDNM for TNC and the BLM. This research was conducted for the specific purpose of understanding ecological conditions and processes on the monument in relation to management decisions. Only one of the six reports that PBI wrote for TNC and the BLM is referenced in the (DRMP/DEIS). Five of our studies are not mentioned in the DRMP/DEIS despite the fact that they were produced at over 4 years ago and I personally presented the information to BLM staff that were responsible for management of the SDNM and development of the DRMP/DEIS. PBI developed high quality information and maps on vegetation communities and their ecological condition, explicitly to aid BLM in developing their management plans and the DRMP/DEIS. Instead of using this high quality information, BLM used data that are coarser scale and much less accurate than the data that PBI's provided to BLM. For example, the BLM used vegetation community maps that have no resemblance to the detailed and accurate vegetation maps that PBI produced and delivered to the BLM, which much more accurately characterize monument's ecosystems. The agency's reliance on low quality and low resolution information to make management decisions is inexplicable. I am personally and professionally disappointed at BLM's choice to ignore this scientifically-robust information.

One of the most blatant issues that I have become aware of in the DRMP/DEIS is that some of the work that we did do is distorted and misapplied and that other statements and information included in the DRMP/DEIS is incorrectly attributed to PBI when it has no resemblance to the work we did and the reports that we published and distributed to TNC and the BLM. In one glaring example of this, on page 1186, the BLM attributes Table F.23 to "Pacific Biodiversity Institute Saguaro Study." In truth, PBI was never contracted for a saguaro study and explicitly told the BLM in our 2003 report, "We recommend further analysis of the saguaro demographic data and the relationship of the saguaro population demographics to the natural community cluster groups, environmental gradients, and disturbance gradients. Our hypothesis developed during field observations is that the distribution of small saguaros is closely associated with certain cluster groups and is influenced by the level of livestock activity." We noted fewer small saguaros in areas proximate to intensive livestock grazing, but explicitly clarified that we could not make any definitive statements because our study was not focused specifically on saguaro recruitment.

PBI never produced the statistical analysis shown in the DRMP/DEIS and I demand that you remove our name from Table F. 22. Any conclusions derived from this data are solely those of the BLM and do not reflect my empirical observations, statistical conclusions, or represent in any other way the work of PBI or any of our staff. In fact, BLM appears to be using these data to support the opposite conclusion than the one I reached in my four years of study of the Monument's ecosystems, stating instead that grazing is not having an adverse effect on small saguaros. This is untrue and unproven, and goes against all the other scientific reports that have studied such things and what we observed in the field.

The BLM has also used PBI data in other ways that are inaccurate. For example, BLM characterizes the ecological conditions of allotments north of Interstate 8 in comparison to PBI's plots in the areas without authorized livestock grazing south of Interstate 8 on the Barry M. Goldwater Range and "Area A." The lands of BMGR/Area A may not have authorized livestock grazing, but they certainly have trespass livestock grazing, burros, and other types of disturbance. The area south of Interstate 8 experienced a long history of livestock grazing in the late 1800's through the mid 1900's. Its ecological condition has been influenced by livestock grazing. More importantly, there are simply not enough plots distributed across comparable ecological sites to infer representative baseline conditions or deviation from reference conditions. The comparisons that BLM attempts to make between the plots south of Interstate 8 and those north of I8 reflect do not appear to be valid and represent a misuse of the data that PBI collected and a misunderstanding of valid scientific methods and uses of this data.

I also strenuously disapprove of BLM's use of a subset of PBI's data to support its conclusions about rangeland health. Our study was designed to explicitly address the impact of livestock watering sources on the ecological health of the SDNM. We did this by collecting data along linear transects around a number of water sources. At each water source, we sampled four or more plots, including a plot within the central disturbance area, the second at 50 meters from the disturbance, the third at 100 meters, a fourth at 500 meters, and additional plots at 500 meter intervals out to 5-km. The LHE process used only data from plots that were 1,000 meters or farther from disturbance sites (F.6.3). This neglects the range conditions most directly attributable to livestock grazing within the 1 km distance.

BLM used data from only 48 of 320 plots for which PBI gathered a full set of quantitative data. This eliminated data from 272 plots that could have better characterized the landscape condition. It eliminated the plots that often dramatically documented the impacts of livestock grazing and the potential for harm to monument objects from livestock grazing. This highly selective use of our data is indefensible.

Even so, BLM also does not admit that some of our plots are not in relation to active water sources, in part because some water sources that the BLM told us were active were in fact inactive. As we told BLM in our reports, the data it provided to us regarding active waters was inaccurate, with some of the wells broken down, tanks unable to hold water, and other "active" waters showing years of neglect. The BLM has not, apparently, conducted a new inventory and determined which data sets are accurate for their proximity to water or, if it has, has not admitted the degree to which range improvements on the Monument are in disrepair, which influences livestock distribution.

I reported observations to BLM regarding the impacts of livestock grazing on monument objects, including the difficulties in even studying monument objects due to livestock impacts. For example, in the Phase I report, titled "Natural Communities of the Sonoran Desert National Monument and Sand Tank Mountains," we reported:

- In the grassland community, we had difficulty identifying species due to grazing having reduced grasses to short stubble (10, 36). We noted that intensive grazing had affected the structure of the grassland community, resulting in large and small patches of bare ground (36). We indicated that grazing was the most obvious disturbance pattern in place on the SDNM. We also included a fence line photograph to demonstrate the differences across management jurisdictions and the differing levels of grazing intensity (37).
- In the mesquite bosque community, we indicated that sampled areas were extensively modified and heavily grazed (40). We also noted that many of the mesquite bosques were altered by water developments for livestock operations (37).

In the second report, titled, "The Natural Communities and Ecological Condition of the Sonoran Desert National Monument and Adjacent Areas," we specifically evaluated the level of disturbance and stressors. We tallied the individual occurrence of cow prints, cow dung, cow trails, horse prints and horse dung in order to quantify grazing pressure.

- We again noted the difficulty with plant identification due to heavy grazing (8).
- We included aerial imagery of the SDNM and adjacent lands that showed significant ongoing and progressive changes in the vegetation communities over several decades due to intensive grazing and hydrological alteration (81, 82). Our field observations were coincident with the aerial images showing progressively reduced grass cover within the grassland communities on the SDNM. In layman's terms, the ecologically-altering effects of livestock grazing were visible from space.
- We found that the vegetation composition and structure in areas in close proximity to livestock waters was highly altered, as were soil structures (97). The influence of livestock in the creosote-bursage desert scrub community (one of the major ecological zones on the SDNM) was widespread; few of the regions we visited in the study area were without some indication of livestock influence.

- We also concluded that off-road vehicle stresses on the SDNM were not as statistically significant as the impacts of livestock grazing, and that off-road vehicle use during the field season was much more localized than stresses related to livestock use (116).
- In our phase 2 report, we also compared our analysis of ecological conditions to the BLM's *Standards for Rangeland Health and Guidelines for Grazing Administration* and we determined that our studies could be used to determine the health of watersheds, ecological processes, and habitat conditions, three of four variables that are used by the agency to assess rangeland health conditions (99).
- Based on our observations and field data, we indicated that the rangeland health of SDNM lands would not be met on many of the plots we sampled. For example, plots with serious erosion and degraded soil would be unlikely to meet standard one, "Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate and landform (ecological site)" (99).

The third report PBI (Phase 3) provided to the BLM and TNC was "Native Grass Abundance in the Sonoran Desert National Monument and Adjacent Areas," October 2004. This study was designed specifically to respond to the designation of native grasses as a conservation element to be managed for in the monument (5).

- This study looked at areas both north and south of the Interstate, and we did not observe marked differences in ecological conditions of the vegetation communities between the two areas.
- The third report focused on the distribution of native grass cover across and within all of the vegetation communities on the SDNM to evaluate whether five percent native grass cover was a meaningful threshold for determining areas of high grass cover on the SDNM. We decided that it was (7).
- We determined from our previous sampling on the SDNM that areas with high native grass cover were almost universally on the rocky slopes and mountain upland areas of the SDNM (9). We used this information to predict and model the occurrences of high native grass cover areas elsewhere on the monument (18).
- We confirmed that the low elevation areas of the SDNM had low grass cover. This was in contrast to the high abundance of native grasses on low elevation areas of the East Tactical Area of the Barry Goldwater Air Force Range, immediately adjacent and highly similar to the SDNM. Grazing had been excluded from the "East Tac" for several decades (37).
- We also discovered areas with disappearing native grass communities (37). We noted that this receding natural community occurred in the vicinity of intense grazing pressure.

We completed a fourth report during phase 3 of our analysis, "Native Grass Characteristics within Xeroriparian Communities of the Sonoran Desert National Monument." This report was completed in July 2006, and it provided a specific analysis of the xeroriparian communities of the SDNM that had been less intensively sampled during the previous phases of our research into the vegetation communities on the monument.

- We established 56 research plots in xeroriparian areas, and we correlated these plots with distance to a livestock water development.
- The research was limited to the parts of the monument north of Interstate 8, and we analyzed the vegetation data across and within specific grazing allotments. We

understood our role to be an assessment of the impacts of various grazing management regimes on these allotments.

- We found statistically significant relationships between native grass species composition, density, and cover and grazing allotment, as well as the native grass composition and the amount of exotic grass cover (5).
- We found statistically significant relationships between exotic grass cover and distance from a water source, total grass cover and grazing allotment, exotic grass cover and grazing allotment, evidence of livestock and distance from a water source, evidence of livestock and allotment, and native grass cover and the amount of livestock sign (5).
- We determined that there is a correlation between native grass cover and grazing activity. We also noted that the Bighorn allotment showed the highest degree of livestock grazing impacts (5).
- The amount of native perennial grasses measured within the 56 sample plots was extremely low, and we were not able to conduct adequate statistical analyses on this category of grass. Perennial native grass cover within the northern part of the SDNM was less than we found previously in the same natural community types in the nearby Barry M. Goldwater Range (BMGR) (6).
- We were able to conclude that the Bighorn allotment had far less native grass cover, diversity, and density than the other three allotments north of the interstate. Our analysis indicated that higher cattle activity seemed to be occurring on this allotment relative to the other allotments. We considered this substantial proof that higher levels of livestock grazing were occurring on this allotment, and we inferred that native grass cover and density were being reduced due to this activity (62).
- We included in our report the numerous cattle carcasses we observed on this allotment during our fieldwork, and we noted our suspicion that cattle mortality was due to drought and absence of forage (62).
- We concluded the report with an acknowledgement that the most significant finding in our study was that, on the parts of the SDNM north of interstate 8, the abundance of exotic grasses is very high and abundance of native grasses is very low. We noted that this is not characteristic of Sonoran Desert xeroriparian areas at large and we pointed to our earlier studies indicating that ungrazed areas have higher abundance of native grass species (64).
- We did not have any data on the actual stocking rates of the allotments of the SDNM. We simply interpreted grazing intensity as the number of signs (cowpies, hoof prints) we observed on our plots. When we discussed our findings with Byron Lambeth, the BLM range conservationist, he seemed to acknowledge that our observations of grazing intensity corresponded with stocking rates on the various allotments, but we did not have the opportunity to correlate these findings statistically.
- In sum, we observed a high degree of livestock impacts within 1 km of a water development, including many denuded and bare patches of soil and an increase in exotic species canopy. The impacts are reduced to moderate intensity 3-4 km from water sources and then taper off as the distance increases.
- The reality of the SDNM is such that there are very few low elevation areas greater than 5-6 km from a water source, and so there are very few places on the monument where there aren't heavy to moderate impacts to the vegetation communities from livestock grazing. All of the low elevation vegetation communities are fairly heavily impacted by this land use.

Our final report to BLM and TNC was called "Distribution and Abundance of Native Grasses in the Mountains of the Sonoran Desert National Monument and Adjoining Portions of the Barry M. Goldwater Range." This report was completed in July of 2006. The purpose of the project was to further characterize the native grass conservation element in the mountains of the Sonoran Desert and to identify threats and conservation needs in these areas (9).

- We were surprised to find livestock grazing impacts in the upland areas during our 2006 field season. In our research in 2002, 2003, and 2004, we did not observe any significant sign of livestock grazing above the lower elevations. We believed that livestock did not graze in the steeper, rougher, and less hospitable rocky slopes. However, in 2005 and 2006, we found several noteworthy examples of grazing impacts, even at the very tops of the highest mountains (43).
- We observed both live and dead cattle in these high elevation mountain areas (43).
- During our repeat monitoring at mountain plots established in 2003, we observed new evidence of livestock. In one plot, we observed significant impacts that occurred between fall 2005 and spring 2006. All of the mountain upland grazing occurred on the SDNM (43).
- Because we did not previously observe high elevation grazing impacts, we had not included this variable in our analysis of mountain grasslands. We recommended that the BLM study anew the effects of grazing in high elevation areas if this impact would be ongoing (45).
- It was not clear to me why the livestock grazing increased in the mountain areas during our studies, but it could be due to the depletion of forage resources in the lower elevation vegetation communities. As noted above, our reports to the BLM often indicated the impacts livestock were having in the lower elevation vegetation communities, and it is possible that the effects of livestock moved upslope as the degradation progressed.

In general, the DRMP/DEIS fails to adequately consider these observations, data and conclusions and instead takes the most basic data (cover, composition) from a selected subset of the PBI plots to reach conclusions about the compatibility of livestock grazing with the protection of monument objects. BLM's conclusions are without any valid basis and represent a misuse and misunderstanding of the data that we collected. The BLM's conclusions in the DRMP/DEIS are not credible to any objective person who has taken a hard look at resource conditions, as I have. Instead, the BLM relied on selective analysis of a small subset of PBI's data and qualitative assessments to reach the exact opposite conclusions that PBI did during our four years of study of the Monument. Indeed, it appears that BLM was unsatisfied with PBI's conclusions (and unwilling to take the necessary actions to alleviate livestock pressure on Monument ecosystems) and instead created an entirely new (and invalid) method with which to reach its foreordained conclusions.

What should be obvious even to the casual observer of the SDNM is that grazing under current and past management regimes is not sustainable with any level of resource protection. The sheer number of livestock carcasses to be found there on any given day is evidence of improper management, insufficient forage, or both. The degradation of Monument resources is quite obvious in many areas.

The preferred alternative to remove livestock grazing from the Conley allotment is a positive first step, but the only alternative that actually and appropriately reflects the scientific findings is the alternative that permanently retires all livestock grazing allotments on the SDNM.

I am personally and professionally disturbed by the malfeasance the agency has shown in the DRMP/DEIS planning process. I am upset that instead of relying on the best available science, the agency simply cherry-picked pseudoscience to support its agenda. I am saddened that the SDNM, a national treasure, will continue to be degraded by poorly regulated livestock grazing under the new plan.

On a final note, the BLM should be advised that some of the GIS data files included as supporting information on the DRMP/DEIS website page are devoid of any data or other information. Some of this data has zero content. This includes data from PBI's studies. The GIS data that BLM provided to the public through the website is also woefully incomplete. The GIS data provided by BLM on the DRMP/DEIS website on vegetation does not match the vegetation map that is included in the DEIS. When the BLM does not provide adequate data, or zero content data or data that is in direct conflict with maps in the DRMP/DEIS it makes it very difficult for the public to conduct a detailed review of the DRMP/DEIS. I suggest that the BLM rectify this situation, revise its analysis and issue a supplemental DRMP/DEIS which rectifies all the issues that I have discussed above.

Sincerely,



Peter Morrison

Executive Director, Pacific Biodiversity Institute

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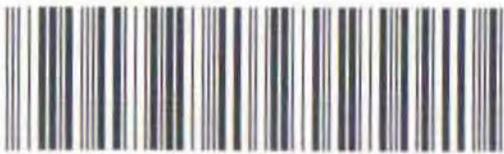
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