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Biological Diversity Inaccuracies and Omissions of the MIA for Cabo Dorado

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Overview

In November 2013 a team of 21 international scientists conducted a weeklong biodiversity survey focused on the plants, mammals, reptiles and amphibians, and birds in the core region of the proposed Cabo Dorado development. The results of this biological survey are presented in “Vanderplank, S.V., B.T. Wilder, E. Ezcurra. 2014. Descubriendo la biodiversidad terrestre en la región de Cabo Pulmo / Uncovering the Dryland Biodiversity of the Cabo Pulmo region. Botanical Research Institute of Texas, Next Generation Sonoran Desert Researchers, and UC MEXUS”, which is the basis of this analysis. The rigorous scientific work documented biodiversity far greater than that reported in the Cabo Dorado MIA. *Four hundred additional plants and animals were documented from the Cabo Dorado area than presented in the MIA. This includes 27 NOM-059 and 83 endemic species.*

In addition, there are multiple conservation needs and unique and fragile habitats in the development area not addressed in the MIA. The weaknesses in the report are not simply a product of the absence of temporal or migratory species as the report claims (P. 122 [355 of 965]), but represent a lack of local knowledge and expertise in this region and various examples of poor quality investigation (see detailed comments in the four sections that follow).

The project, despite the assessment to the contrary (p.130 [230 of 965]), is situated in an area of extreme conservation value that is recommended for protection, and the core development zone Punta Arena, is recommended as an extension of the Parque Nacional (Vanderplank et al. 2014).

In these pages we highlight the inaccuracies and omissions of the Cabo Dorado MIA.

	MIA	MIA corrected for inaccuracies	Vanderplank et al. 2014	Omissions
Plants	120	52	392	340
Mammals	16	16	44	28
Reptiles and Amphibians	49	41	29	-8 and +20 [*see section for explanation]
Birds	76	71	95	24
Nom-059 species	15	15	42	27
Endemics	17	17	100	83

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Flora and Vegetation

Reviewed by Dr. Jon Rebman (San Diego Natural History Museum) and Dr. Sula Vanderplank (Botanical Research Institute of Texas)

At a glance:

	MIA	MIA corrected for inaccuracies	Vanderplank et al. 2014	Omissions
Plants	120	52	392	340
NOM- 059	4	4	6	2
Endemics to BCS or Cape Region	2	2	71	69

In contradiction to the MIA, the Peninsula today is known to have a flora of approximately 4,000 native and naturalized plant taxa, not 965 (Rebman & Roberts 2012). The Cape Region where the Cabo Dorado project is located has a unique flora with many narrowly endemic plant species, a number of which occur in the project area, which were not taken into account in the MIA. The biggest omission in the vegetation report is the oversight of two critical habitats: the lagoons and thorn deserts scrub of Punta Arena – the core of the proposed development. These two fragile and extremely restricted habitats have unique edaphic conditions and highly specialized endemic plant species: *Bidens cabopulmoensis* and *Pisonia calafia*. Both are entirely endemic to the proposed development area and at high risk of extinction if Cabo Dorado is realized. Both of these species are absent from the MIA biological report.

Of the 120 species that the MIA reports, only 52 correspond with species that have been previously documented in the region. Botanical exploration in the Cabo Dorado area combined with historical data records adds 340 additional plant taxa that are not reported in this MIA.

Inaccuracies

There are 19 taxa on the list that are not known from the Cape Region, many of which are not known from the state and four [these species noted by *] of which are not known from the peninsula of Baja California (mainland Mexico only).

Agave deserti, *Yucca valida*, *Pachycormus discolor*, *Washingtonia filifera*, *Bergerocactus emoryi*, *Ferocactus peninsulae*, **Ferocactus pringlei*, **Opuntia imbricata*, **Castela tortuosa*, *Cnidoscolus palmeri*, *Eucnide aurea*, *Oenothera deltoides*, *Pennisetum polystachion*, **Karwinskia mollis*, *Datura wrightii*, *Mammillaria insularis*, *Mammillaria hutchisoniana*, *Mammillaria halei*, *Mammillaria brandegeei* var. *gabbii*, *Mammillaria johnstonii*

Five cactus species on the MIA list are synonyms of other taxa on that same list:

Mammillaria gatesii = *M. petrophila*

Mammillaria slevinii & *M. fraileana* = *M. albicans*

Mammillaria roseana = *M. poselgeri*

Stenocereus gummosus = *Machaerocereus gummosus*

Two taxa on the list appear to be fictitious, and despite recognizing more than eighteen orthographic errors in the scientific names, we are unable to determine what the taxa

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Proboscidea californiana (no such species) and *Peobocidoe californiana* (no such genus) might be referring too.

Omissions:

Removing the synonyms, a mushroom, species only determined to genus, and the two unrecognizable names, we find the plant list to only include 52 of the 392 plant taxa that have been collected from the study area and deposited in regional herbaria (Vanderplank et al. 2014).

Plant species of greatest importance not included in the MIA are the following:

Two NOM-059 species are not included in the MIA (in total there are six NOM-059 plant taxa that occur in the area, see Vanderplank et al. 2014 for the full list):

Mangle botoncillo, *Conocarpus erectus* (Combretaceae)

Nopal de Bravo, *Opuntia bravoana* (Cactaceae)

Endemic to development area and notably absent from the MIA:

Bidens cabopulmoensis (Asteraceae; León de la Luz & Medel-Narváez 2013)

Pissonia calafia (Nyctaginaceae; León de la Luz & Levin 2012)

Local endemics absent from the MIA:

Melampodium sinuatum (Asteraceae; Villaseñor et al. 2011)

Stenotis peninsularis (Rubiaceae).

Hyptis collina (Lamiaceae)

All four locally endemic genera were omitted:

Alvordia; *A. brandegeei* (Asteraceae)

Cochemia; *C. poselgeri* (Cactaceae)

Coulterella; *C. capitata* (Asteraceae)

Stenotis; *S. arenaria*, *S. brevipes*, *S. mucronata*, *S. peninsularis* (Rubiaceae)

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Mammals:

Reviewed by Dr. Evelyn Rios (CIBNOR)

At a glance:

	MIA	MIA corrected for inaccuracies	Vanderplank et al. 2014	Omissions
Mammals	16	16	44	28
NOM- 059	1	1	6	5
Endemics (to BCS or Cape Region)	5	5	10	5

The mammal list of Vanderplank et al. (2014) includes 44 taxa, 28 more than the MIA. Of these 28 species, six were recorded to be present in the Cabo Dorado development area and 22 are potentially present, which are not mentioned and should be considered. There is a high density of mammals in the project area, indicating healthy and well-connected ecosystems, which are particularly susceptible to habitat fragmentation (Vanderplank et al 2014).

Inaccuracies:

Of the 16 species the MIA did mention, 12 were misidentified and/or given the wrong subspecific name.

Five species listed to the subspecific level were erroneously identified (*Neotoma bryanti bryanti* is a name change, the other four subspecies were misidentified.) The correct subspecies for the region are:

Odocoileus hemionus peninsulae (not *O. h. cerrosensis*)

Chaetodipus spinatus peninsulae (not *C. s. lambi*)

Dipodomys merriami melanurus (not *D. m. mitchelli*)

Lepus californicus xanti (not *L.c. magdalanae*)

Seven additional species were not identified to the subspecific level in the MIA. Six of the seven are subspecies endemic to the peninsula of Baja California (*Urocyon cinereoargenteus peninsularis*, *Canis latrans peninsulae*, *Sylvilagus audubonii confinis*, *Lynx rufus peninsularis*, *Spilogale gracilis lucasana*, *Ammospermophilus leucurus extimus*, *Taxidea taxus berlandieri**)

*= non-endemic subsp.

The families of two mammal genera were incorrectly written, (*Spilogale*, belongs in Mephitidae not the Mustelidae and *Macrotus* is in the Phyllostomidae not the Phyllostomatidae).

Omissions:

Four bat species and two rodent species documented for the Cabo Dorado development areas (Vanderplak et al. 2014) do not appear on the MIA. The bat species are: *Tadarida brasiliensis mexicana*, *Lasiurus xanthinus*, *Parastrellus hesperus hesperus* and *Leptonycteris*

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yerbabuena, which is IUCN vulnerable and NOM 059 Amenezada. The rodents are *Peromyscus maniculatus coolidgei*, which was only found in the heart of the development site at Punta Arena and is a peninsular endemic, and *Peromyscus eva eva* which is endemic to the peninsula.

Twenty-two additional species (see list below) are potentially present in the study area and not mentioned in the MIA. Four of these taxa are IUCN listed [indicated with a * in the list below], and four are listed on the NOM 059 (*Myotis vivesi* (P); *Choeronycteris Mexicana* (A); *Notiosorex crawfordi* (A); *Chaetodipus ammophilus dalquesti* (Pr))

Additional species potentially present (expected) in the region but not mentioned in the MIA:

Antrozous pallidus minor
Balantiopteryx plicata pallida
Bassariscus astutus palmarius
*Chaetodipus ammophilus dalquesti**
*Choeronycteris mexicana**
Corynorhinus townsendii pallescens
Eptesicus fuscus peninsulae
Eumops underwoodi sonoriensis
Lasiurus cinereus cinereus
Mormoops megalophylla megalophylla
*Myotis peninsularis**
*Myotis vivesi**
Myotis volans volans
Myotis yumanensis lambi
Natalus mexicanus
Notiosorex crawfordi
Nyctinomops femorosaccus
Nyctinomops macrotis
Pteronotus davyi fulvus
Puma concolor improcera
Sylvilagus bachmani peninsularis
Thomomys anitae anitae

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Reptiles and Amphibians

Reviewed by Dr. Brad Hollingsworth (San Diego Natural History Museum), Anny Peralta (CIBNOR), M.S. Jorge H. Valdez Villavicencio (Pronatura, AC), Dean Leavitt (UC San Diego), and Dr. Adrian Munguia Vega (University of Arizona and CIBNOR).

At a glance:

	MIA	MIA corrected for inaccuracies	Vanderplank et al. 2014	Omissions
Reptiles and Amphibians	49	41	29	-8 and +20 [*see explanation below]
NOM- 059	10	10	19	9
Endemics to Baja California Peninsula, BCS, or Cape Region	5	5	13	8

* Eight species recorded as present in the Cabo Dorado area by Vanderplank et al. were not accounted for in the MIA. Twenty additional species were presented in the MIA, 16 of which either found far outside the Cabo Dorado area and their inclusion is highly questionable.

The MIA is inadequate in evaluating the biological diversity of amphibians and reptiles of the region and the project's impacts. Most significantly, the MIA fails to evaluate what impacts the development will have on the extensive nesting sites of the Olive Ridley sea turtle (*Lepidochelys olivacea*) at Punta Arena and misrepresents the actual herpetological biodiversity of the proposed development area.

Inaccuracies:

The summary data analyzed in section IV.3.2.2.4 on page 163–165 contains a number of significant mistakes. The report contains nine species that do not have distributions within or anywhere near the project area. The report also uses the NOM-059_SEMARNAT-2001 when a newer list is available from 2010. Resulting from this, the number of federally protected species present in the Cabo Dorado area is significantly higher than reported. The MIA contains numerous spelling errors, an out-dated taxonomy, amphibian species inserted into the reptile tables, inconsistencies in the various species lists, and appears to have been hastily assembled. These inaccuracies include the exclusion of important, protected species, or the failure to indicate that species are listed on the NOM-059, or species that have a restricted distribution within Mexico (endemic to the Baja California Peninsula, to Baja California Sur or to the Cape region).

Table 1 on pages 154–155 lists 22 observed species (with two as unidentified *Sceloporus* species). Of these 22 species presented, six species do not occur near the project area, with the majority coming from areas hundreds of kilometers away (e.g., *Sceloporus occidentalis*, *Urosaurus lahtelai*, *Plestiodon skiltonianus*, *Urosaurus graciosus*, and *Ctenosaura cosnpiuosus*

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are from northern Baja California or Sonora). Table 1 contains numerous spelling errors and an outdated taxonomy.

Table 2 on pages 155–157 includes a column for species reported from the region. Numerous errors occur on this list including species marked as being within the region but are not and species not marked in the table that are found within the region. The table is referenced with McPeak (2000) and Stebbins (2003), but the information in the table is inconsistent with these sources. This includes the exclusion of a number of species observed in Table 1 (e.g., *Anaxyrus punctatus*, *Dipsosaurus dorsalis*, *Phrynosoma coronatum*, *Sceloporus zosteromus*, and *Uta stansburiana*; all of which, are readily described in the literature as occurring in the region). Table 2 also contains numerous spelling errors and an outdated taxonomy.

The table presented in Chapter 8 on page 40 lists 18 species. When compared with Table 1 on pages 154–155, the lists are inconsistent, with the Chapter 8 table excluding the two unidentified *Sceloporus* species and the two sea turtles (*Lepidochelys olivacea* and *Caretta carretta*). This table contains the same errors as described for Table 1.

For assessing the biological diversity of amphibians and reptiles, the methods indicate that unconstrained direct searches were completed, but information about how the numbers in the table in Chapter 8 under “frecuencia” were not explained. These values are likely raw observations from unconstrained surveys, which should not be interpreted as values of abundance. Unconstrained direct searches are inadequate for determining the amphibian and reptile diversity of this region.

Omissions:

Compared to the 2013 inventory and search of museum data (Vanderplank et al. 2014), there are eight species missing entirely from the MIA: *Chelonia mydas carrinegra* (P), *Crotalus mitchellii* (Pr), *Masticophis fuliginosus*, *Pituophis vertebralis*, *Salvadora hexalepis*, *Scaphiopus couchii*, *Sceloporus hunsakeri* (Pr), and *Sceloporus licki* (Pr).

The MIA fails to report on the proper NOM-059-SEMARNAT-2010 status. No mention of NOM-59 protection is made for the observed species *Aspidoscelis hyperythra* (A), *Aspidoscelis maxima* (A), *Chelonia mydas* (P), *Chilomeniscus stramineus* (Pr), *Coleonyx variegates* (Pr), *Crotalus enyo* (A), *Hypsiglena ochrorhyncha* (Pr), *Petrosaurus thalassinus* (Pr), and *Phyllodactylus unctus* (Pr). No mention of NOM-059 protection is made for the reported species to the region, which have not been confirmed by our inventory. These include: *Lichanura trivirgata* (A), *Masticophis aurigulus* (A), *Eretmochelys imbricata* (P), and *Dermochelys coriacea* (P). In addition, the MIA fails to note that *Crotalus enyo* (A) is listed on the DOF.

The MIA fails to mention that 13 species reported in the document are endemic either to the Peninsula of Baja California (*Aspidoscelis hyperythra*, *Crotalus enyo*, *Crotalus ruber*, *Masticophis fuliginosus*, *Pituophis vertebralis*, *Hypsiglena slevini*), endemic to Baja California Sur (*Plestiodon lagunensis*), or endemic to the Cape region (*Aspidoscelis maxima*, *Petrosaurus thalassinus*, *Phyllodactylus unctus*, *Sceloporus hunsakeri*, *Sceloporus licki*, *Masticophis aurigulus*).

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Birds

Reviewed by Emily Clark (Prescott College) and Phillip Unitt (San Diego Natural History Museum)

At a glance:

	MIA	MIA corrected for inaccuracies	Vanderplank et al. 2014	Omissions
Birds	76	71	95	24
NOM- 059	0	0	11	11
Endemics to Baja California Peninsula	5	5	12	7

The avifaunal diversity report of the MIA underrepresents the actual bird diversity of the Cabo Dorado area, omits the presence of the 11 NOM-059 species found in the area, and fails to address the impact of development to nesting birds. Many birds will not be able to inhabit the altered habitats offered by golf courses and their surroundings. Dune species, such as the snowy plover, a U.S. federally threatened species.

Inaccuracies:

Five species included in the MIA do not occur in the Cabo Dorado area:

Toxostoma "longirostris" (should be *longirostre*) is not known from Baja California and is not plausible even as a vagrant.

Psaltriparus minimus grindae and *Pipilo erythrophthalmus magnirostris* are not expected at so low an elevation as Cabo Dorado

Thryomanes bewickii occurs much further to the north in the Peninsula, its presence at Cabo Dorado is well south of the known range of in Baja California Sur (these records are unlikely).

Tringa melanoleuca is listed twice and the 2007 list includes the very similar *Tringa flavipes*.

In addition two species are presented as the wrong subspecies:

Amphispiza bilineata subsp. *carmenae* is endemic to Isla Carmen; it is subspecies *bangsi* that occurs on the mainland of Baja California Sur.

Polioptila melanura should be *Polioptila californica*, and the subspecies should be *margaritae*, not *atwoodi*.

Taxonomic inconsistencies include identification to subspecies in only a few instances. Common names in the document are often erroneous and even associated with different species in the two lists presented (2007 and 2013). Examples include:

Milano coliblanco = *Elanus leucurus*, not *Pandion haliaetus*

Zambullidor orejudo = *Podiceps nigricollis*, not *Chordeiles acutipennis*

Mimus polyglottos is cenzone, not ruiseñor (correct in list for 2013).

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Orthographic errors are frequent, one correction of note is for the Snowy Plover, the scientific name has recently changed from *Charadrius alexandrinus* to *Charadrius nivosus* (it is reported as *Charadrius alexandrinus*).

Additionally, the methods cited are not appropriate to calculate “the abundance, density, richness, composition and distribution” of birds, as claimed. The method only provides a baseline estimate of species richness, and does not address the other factors unless conducted consistently and on a long-term basis. In addition, this method works best with multiple observers, multiple sites, and needs to be undertaken more than once.

Omissions:

The MIA reports 76 species surveyed. The 95 species reported in Vanderplank et al. (2014) are from one trip in November 2013 (outside nesting season and peak migration). Thus, the 95 species, no less the 76 as presented in the MIA, is itself likely an underestimate of the true bird diversity. The MIA report also excludes seven taxa found by Vanderplank et al. (2014), which are endemic to Baja California.

Of greatest concern is the absence of 11 NOM-059 bird species that were readily observed in a single visit in November 2013. These species and their NOM-059 conservation status in Mexico are (En peligro de extinción [P] Amenazada [A] Sujeta a protección especial [Pr]):

- *Sterna antillarum* (Least tern; Pr)
- *Thalasseus elegans* (Elegant tern; Pr)
- *Thalasseus maximus* (Royal tern)
- *Sterna hirundo* (Common tern)
- *Vireo bellii pusillus* (Least bells vireo; P)
- *Geothlypis beldingi* (Beldings yellowthroat; endemic; P)
- *Rallus limicola* (Virginia rail; A)
- *Buteo albonotatus* (Zone-tailed hawk; Pr)
- *Accipiter cooperi* (Coopers hawk; Pr)
- *Egretta rufescens* (Reddish egret; Pr)
- *Ardea Herodias santilucae* (Great blue heron; Pr)

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