

ATTACHMENT C

The text that follows herein is the Final Report, entitled "Identifying Priority Amphibian and Reptile Conservation Areas in California: Pilot Implementation," by B. Todd and J. P. Rose, July 2012. The entire 114 pp. report can be viewed also at the following link:

<https://dl.dropbox.com/u/4125587/California%20PARCA%20report%20no%20Apx.pdf>

Identifying Priority Amphibian and Reptile Conservation Areas in California: Pilot Implementation

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**with additional GIS support from Stacie Hooper and Kristi Fien
California Department of Fish & Game**

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Acknowledgments

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Background and Methods

The purpose of this project was to preliminarily identify Priority Amphibian and Reptile Conservation Areas (PARCAs) using the suggested criteria set forth in Sutherland and deMaynadier (2012), developed in collaboration with Partners in Amphibian and Reptile Conservation. Our goal here was to focus on those species, subspecies, and designated populations recognized by the California Department of Fish and Game (CDFG) as Species of Special Concern, Species of Greatest Conservation Need, listed on the Special Animals list, or otherwise recognized as imperiled. In this project, we use expert-drawn range maps, known occurrences, and quantitative information on landscape viability to highlight first-pass areas that can serve to inform the identification and implementation of PARCAs in California. Our analysis should be viewed only as a pilot study; PARCA designation will require additional input and validation from experts in private, academic, and public sectors, including biologists with CDFG. Additionally, as discussed in the concluding sections of this document, full implementation of a PARCA system in California will require additional high-quality data and may also necessitate some deviation from the suggested PARCA implementation guidelines (see Sutherland and deMaynadier 2012 for criteria).

We used the same taxonomy recently used in the revision to California's list of Amphibian and Reptile Species of Special Concern (Table 1), which generally uses the phylogenetic species concept and recognizes distinct species, subspecies, and designated populations that may receive different regulatory or legal recognition and protection by state or federal agencies, statutes, or laws. To conduct our analyses, we obtained species' legal or regulatory statuses from CDFG and the US Fish and Wildlife Service and imperilment rankings from NatureServe and the International Union for Conservation of Nature (IUCN). We obtained expert-drawn range maps in the form of GIS shapefiles from the CDFG Biogeographic Data Branch. Each range map was created by CDFG personnel and collaborators using species occurrence data and known associations with wildlife habitat as part of the California Wildlife Habitat Relationships System (see <http://www.dfg.ca.gov/biogeodata/cwhr/> for more information). When range maps were not available for newly described species, subspecies, or to reflect distinct populations with different regulatory status, we modified those maps obtained from CDFG or created new ones using occurrence data, published studies, and habitat/ecoregion relationships.

To incorporate landscape viability as described in the PARCA implementation guidelines (Sutherland and deMaynadier 2012), we used the natural landscapes land-use metric and associated GIS shapefiles developed by Theobald (2010). Briefly, the natural landscapes (NL) metric evaluates the degree of human modification of native natural land cover due to factors that include agriculture, urban development, residential land use, and roadways or road networks (see Theobald 2010 for more information). The NL data layer provides information at the resolution of a 270-m cell. The NL metric is calculated by first quantifying the proportion of natural cover at seven scales using circular neighborhoods of 0.07, 0.58, 5.90, 51.7, 478, 4,186, and 38,972 km². The NL value for each 270 m cell is then determined by finding the mean value across all scales (Theobald 2010). It is a

proportional value ranging from 0 to 1. Although not entirely equivalent, a value of 0.5 can be roughly interpreted as representing a cell with 50% landscape viability that reflects the degree of intact natural landscape within the cell as well as in nearby cells. See Theobald 2010 for complete discussion.

For each taxon, we identify whether it meets PARCA Criteria 2 (federally listed or globally imperiled), Criteria 3 (state listed or state imperiled), or Criteria 4 (Species of Special Concern or Species of Greatest Conservation Need as identified by the state).

For PARCA Criteria 2 and 3, we provide a map for each taxon that meets these criteria. Each map outlines the species' distribution, shows historical and modern occurrences, and is overlaid on the natural landscape habitat layer. Occurrence data were obtained from published papers, the California Natural Diversity Database maintained by CDFG, and from HerpNet (<http://www.herpnet.org/>) and the Global Biodiversity Information Facility (<http://www.gbif.org/>).

For Criteria 4, we highlight and shade all areas where two or more Criteria 4 species overlap in distribution within the state. We have drawn potential PARCAs where modern occurrence data suggest that the species still currently overlap and presently occur, and where the landscape meets or exceeds the 50% landscape viability criteria outlined in Criteria 1.

For Criteria 5, we provide an overview of total herpetofaunal richness on an ecoregion basis. Species distributions were converted to rasters with a 1 km resolution. We have drawn a single potential PARCA where richness is greatest in each ecoregion, except in some regions where multiple areas have equivalent richness. Additionally, we ensured that each area selected for potential PARCA designation met or exceeded the 50% landscape viability criteria outlined in Criteria 1.

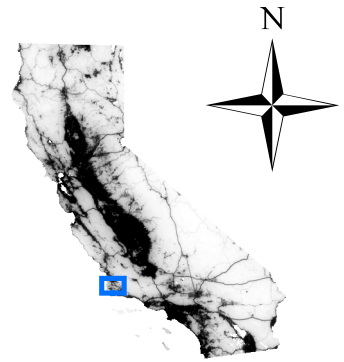
Results

Table 2 lists all amphibian and reptile species, subspecies, or designated populations that meet criteria to be considered for PARCA implementation. The table is sorted first according to the highest PARCA Criterion each taxon meets and then alphabetically by species binomen. It also includes forthcoming additions to the revised Amphibian and Reptile Species of Special Concern list, which will result in the addition of some species, subspecies, or designated populations to the CDFG Special Animals list. Table 2 also identifies the total areal distribution of each of the taxa on the list, as well as the amount of area required to meet strict implementation of Criteria 2-4.

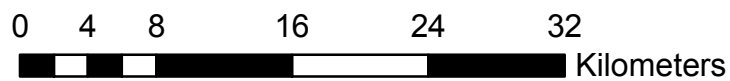
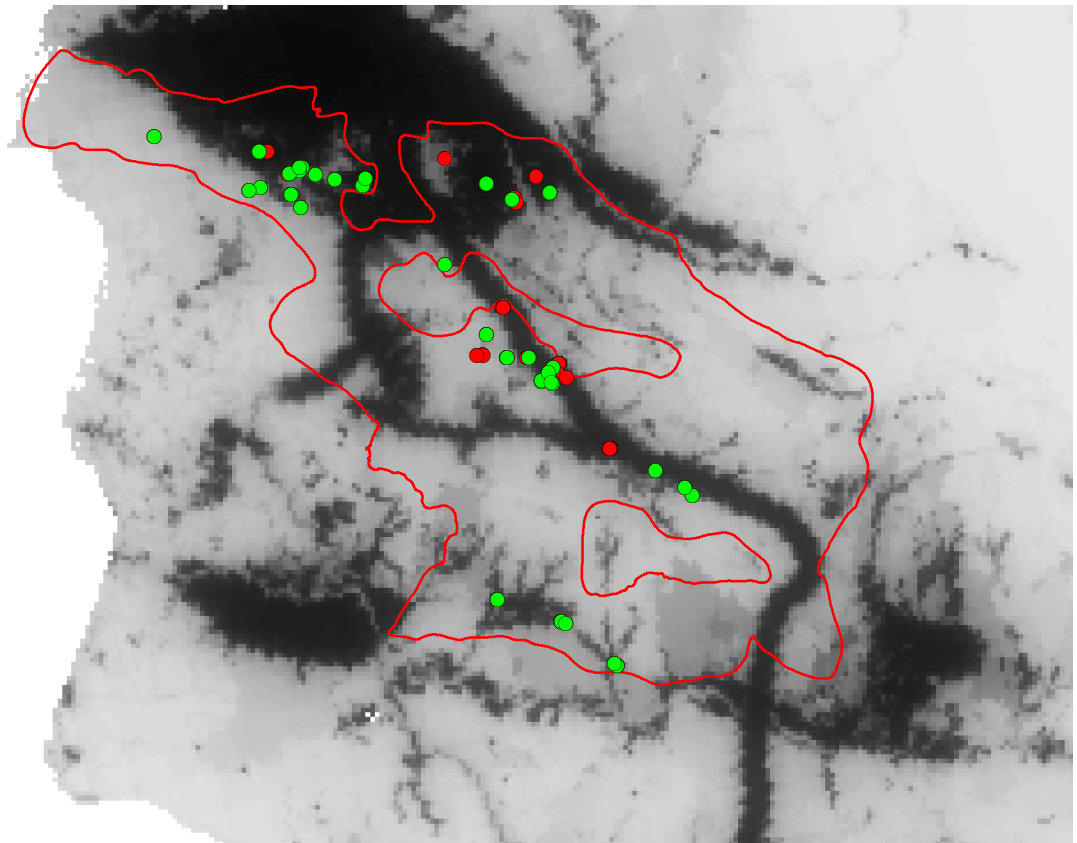
Criteria 2 and 3

On the following 72 pages, we have created a map for each species, subspecies, or designated population that meets Criteria 2 or 3 (see Table 2 for list). Each map identifies the species in question, depicts the range of the species, and displays historical and modern occurrences for this species. These are overlaid on a natural landscape layer used to identify high quality, intact habitat versus that which has been converted or degraded. Challenges and potential obstacles to the strict implementation of PARCAs as described in Criteria 2 and 3 are discussed at the end of this document in the section titled Challenges to PARCA Implementation.

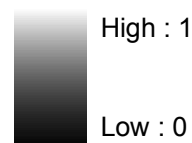
Santa Barbara Tiger Salamander *Ambystoma californiense* "Santa Barbara"



- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



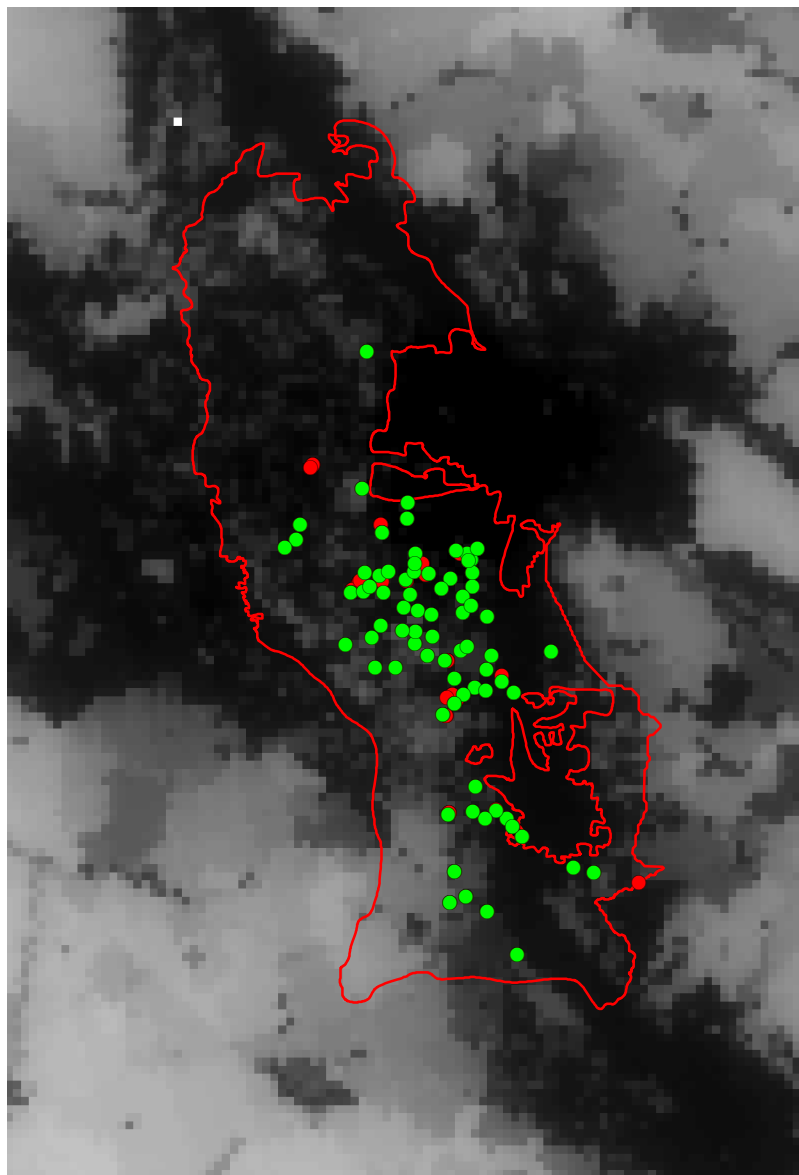
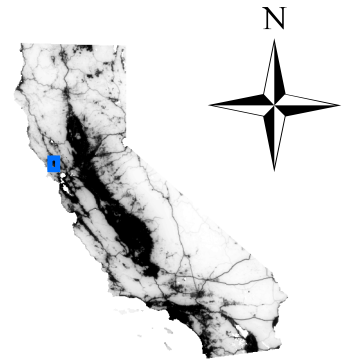
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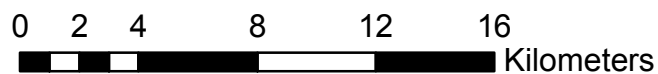
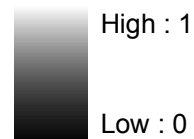
Sonoma Tiger Salamander *Ambystoma californiense* "Sonoma"

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

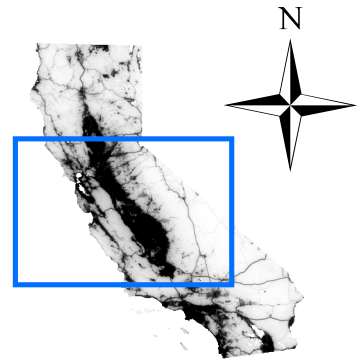
□ Species range



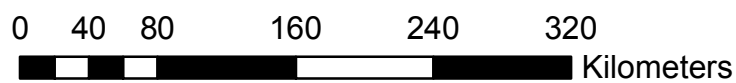
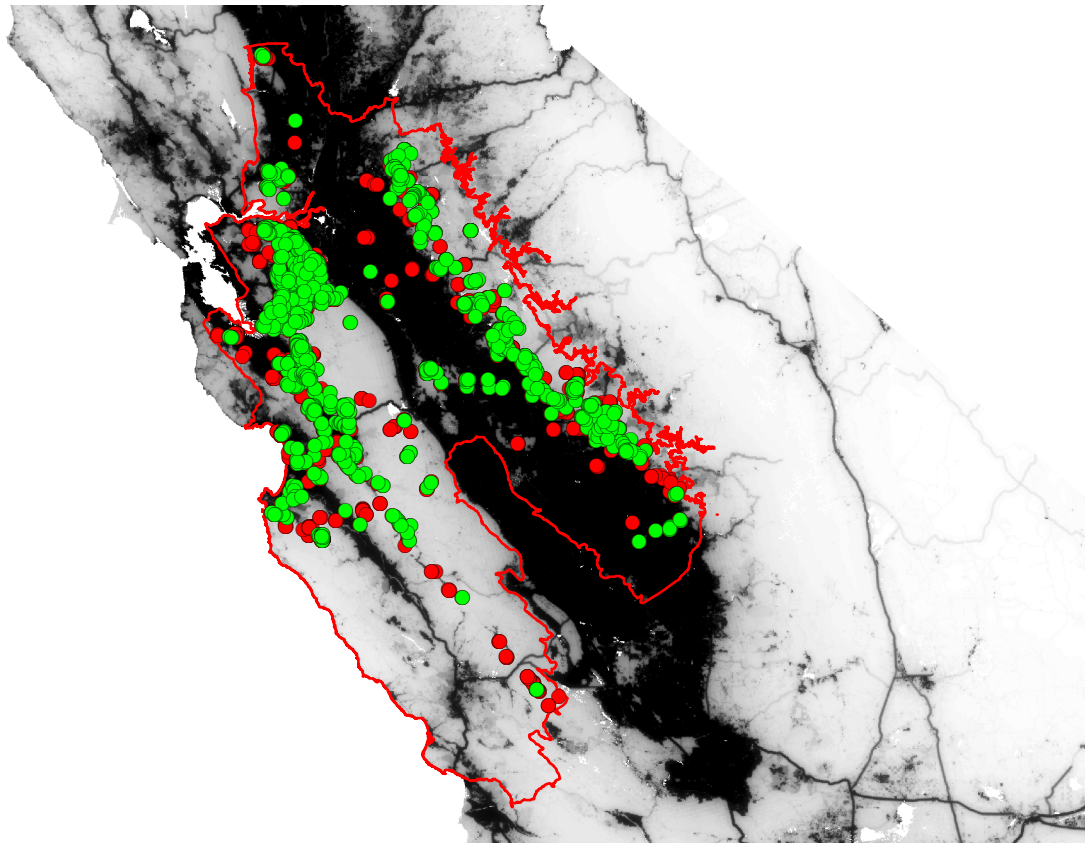
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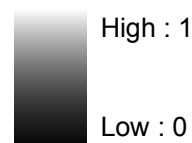
California Tiger Salamander *Ambystoma californiense*



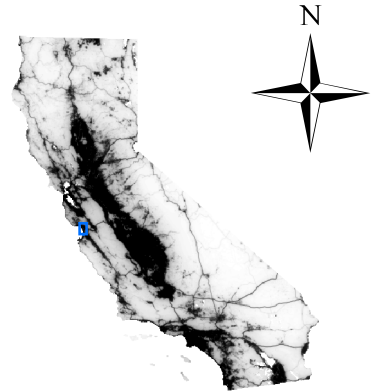
- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



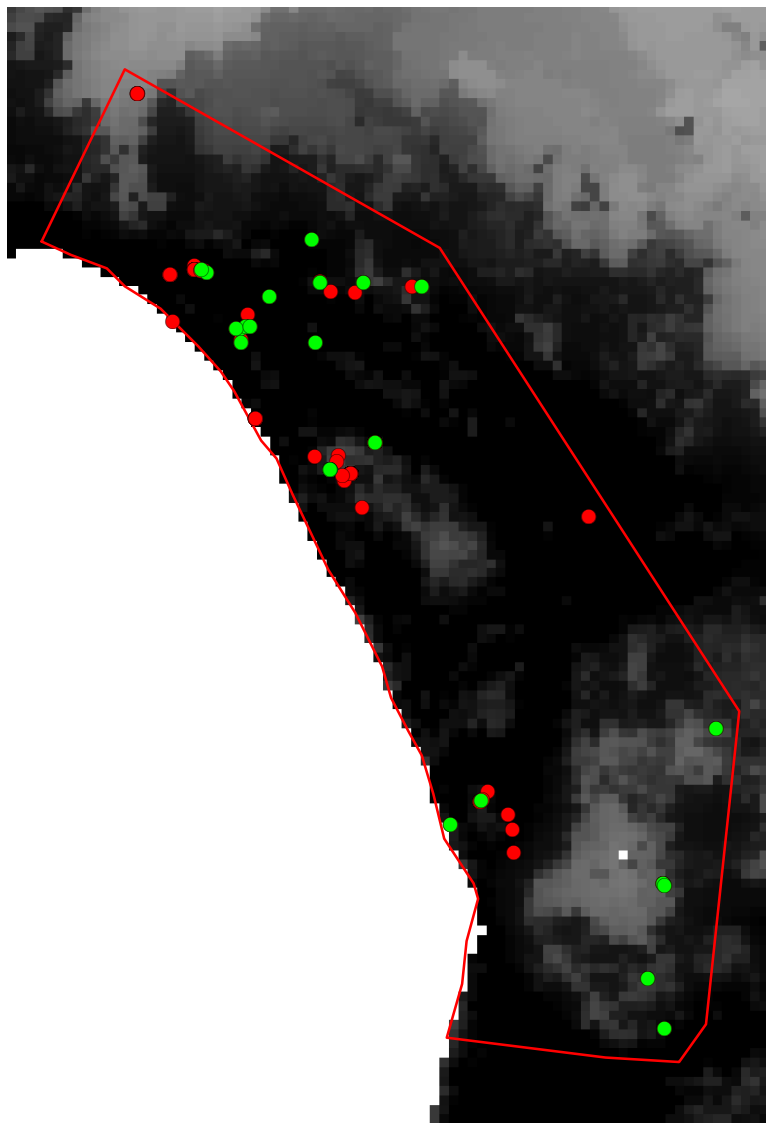
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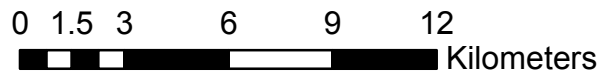
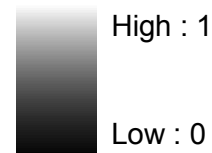
Santa Cruz Long-toed Salamander *Ambystoma macrodactylum croceum*



- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



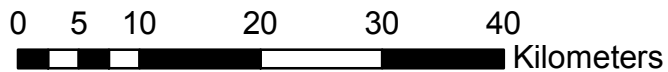
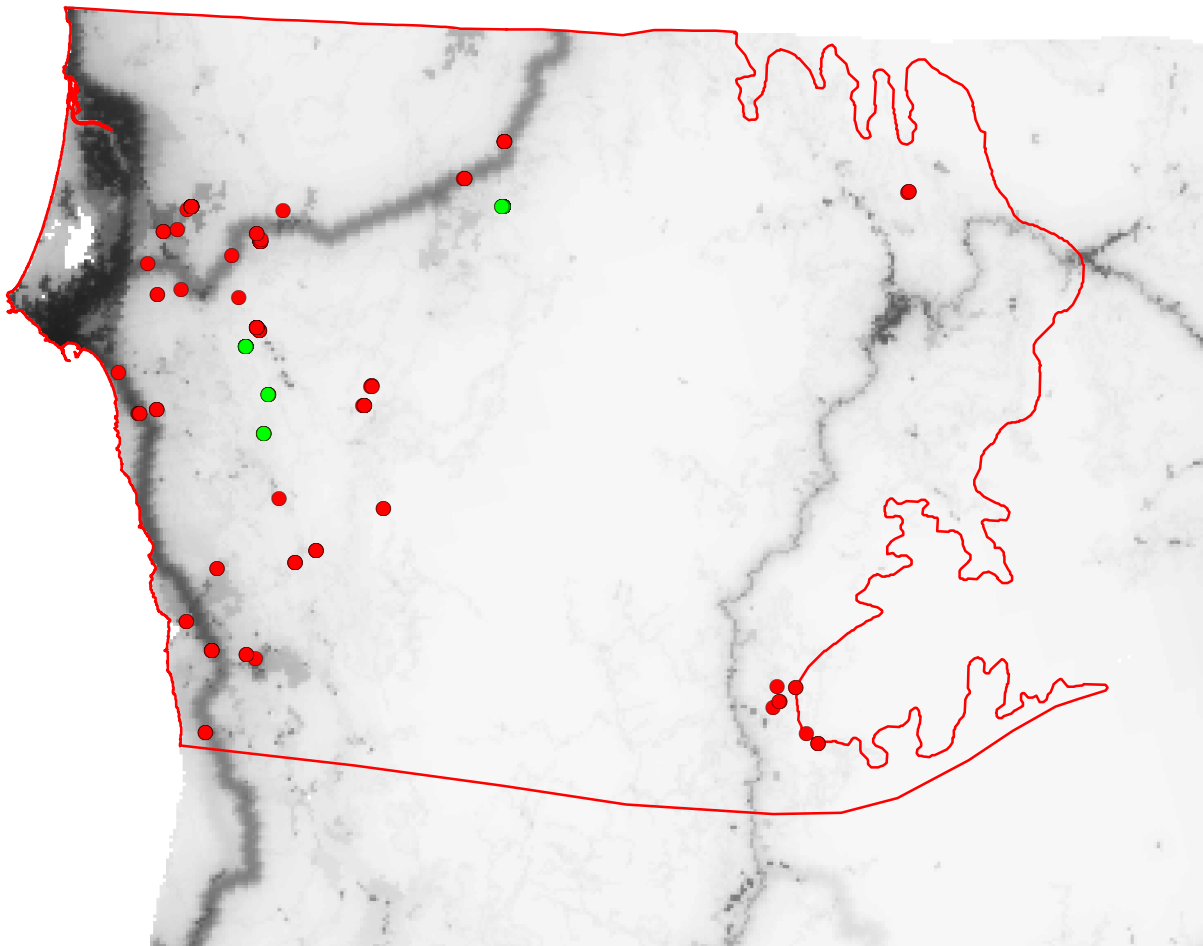
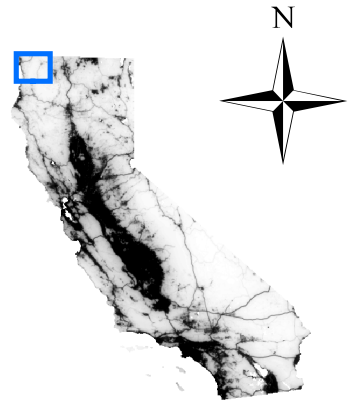
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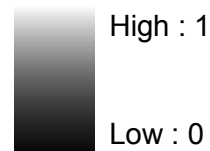
Clouded Salamander *Aneides ferreus*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

Species range



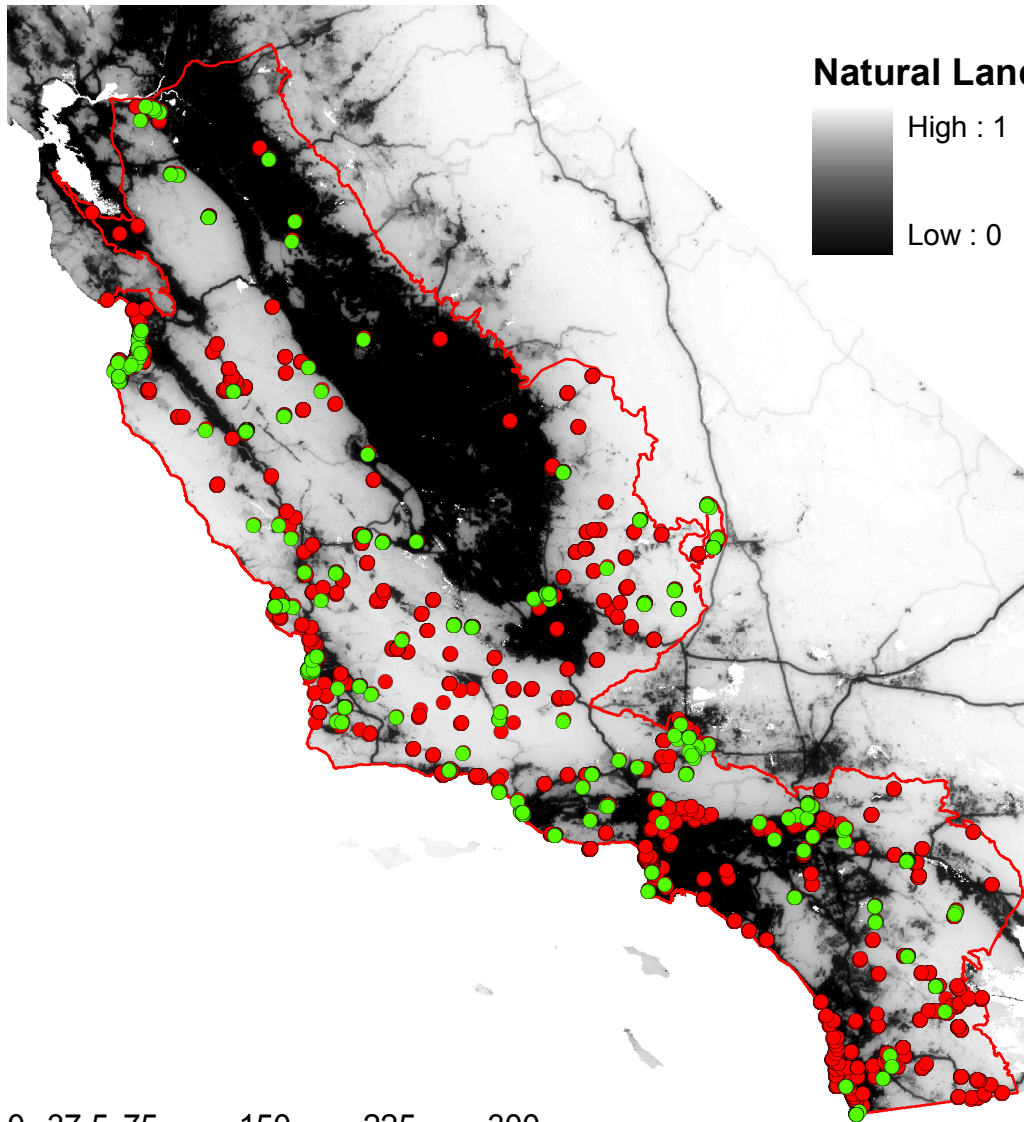
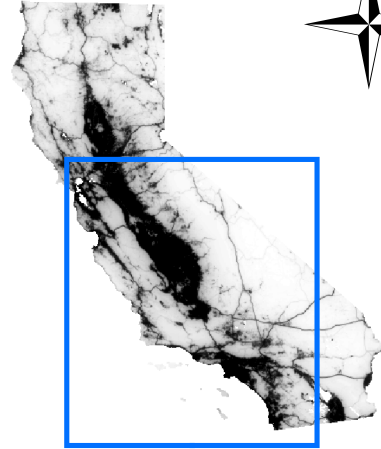
Natural Landscape Value



California Legless Lizard *Anniella pulchra*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range

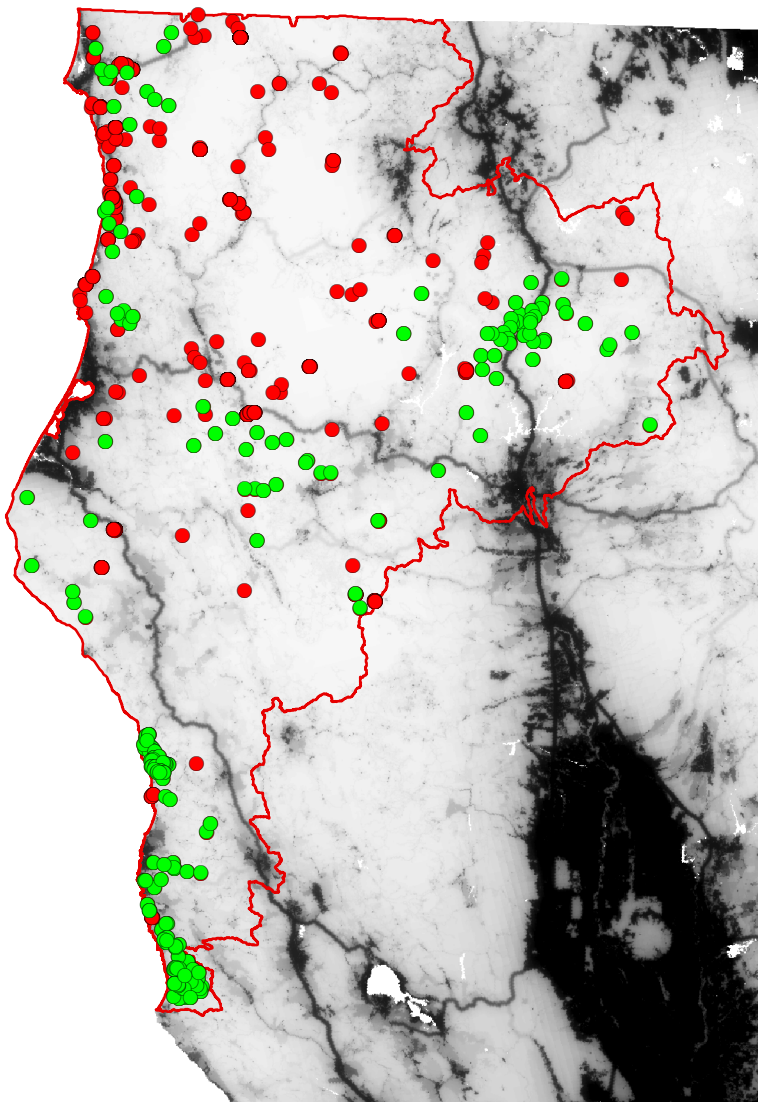
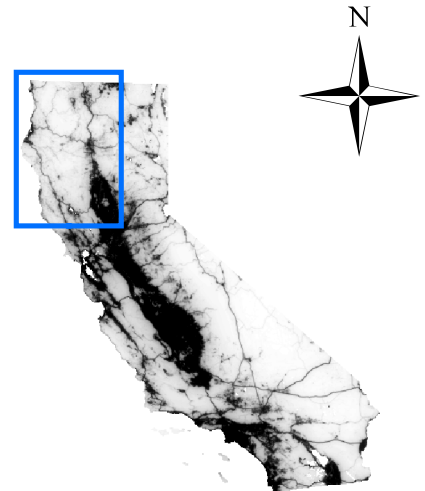


0 37.5 75 150 225 300
Kilometers

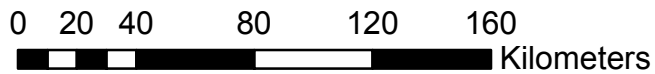
Coastal Tailed Frog *Ascaphus truei*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



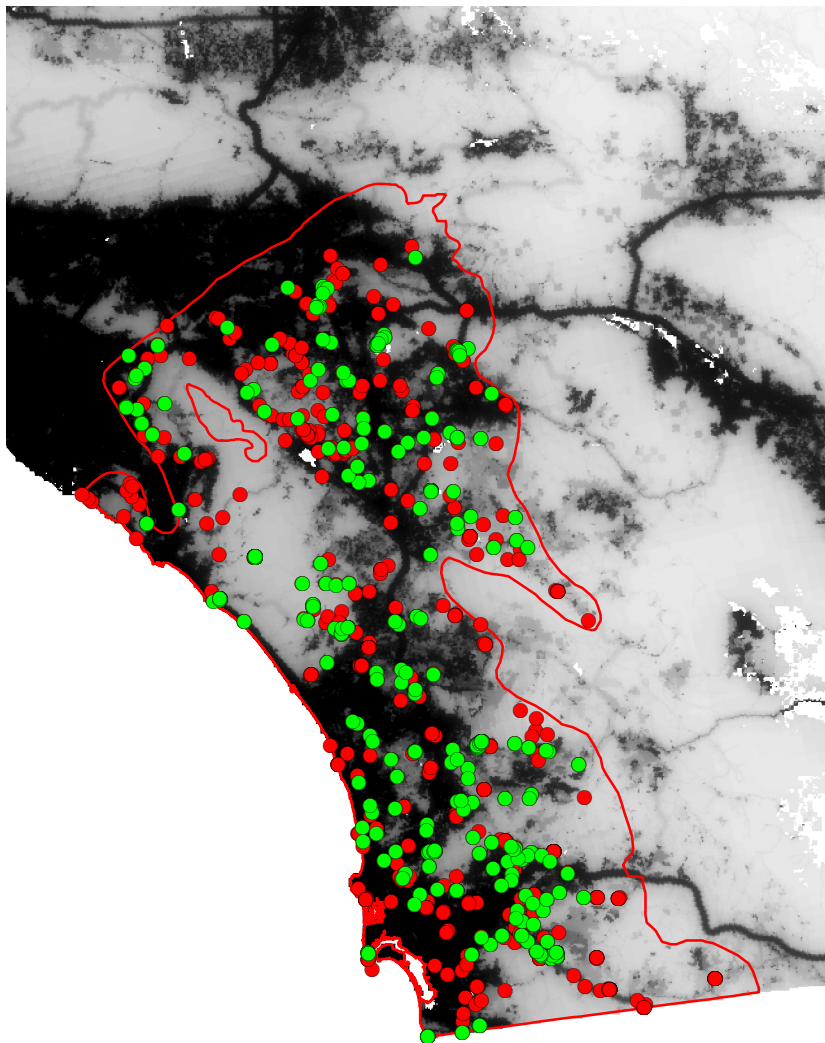
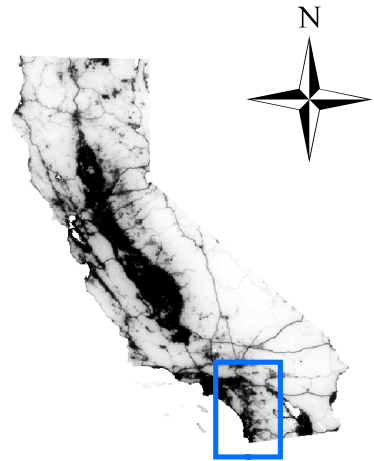
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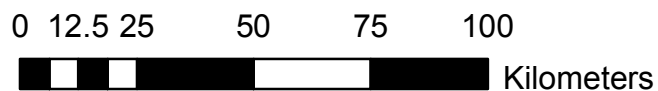
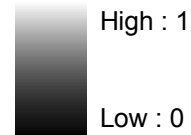
Orange-throated Whiptail *Aspidoscelis hyperythra*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

Species range

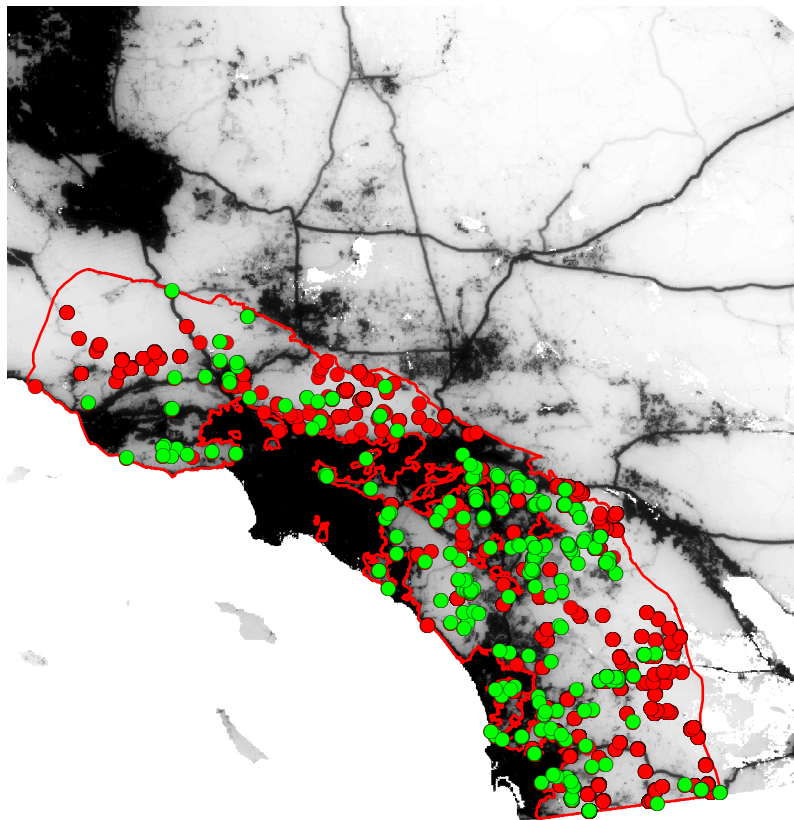
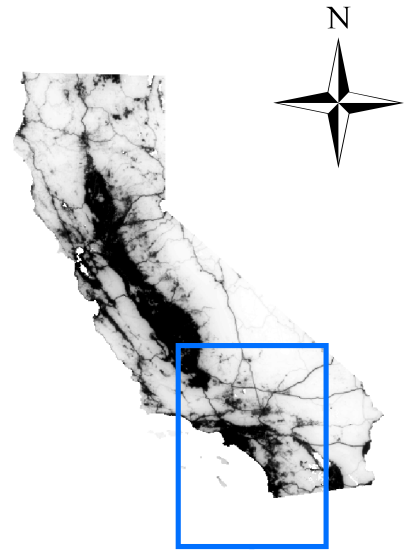


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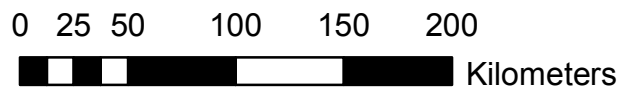
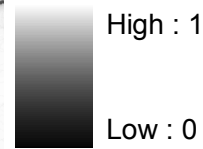


Coastal Whiptail *Aspidoscelis tigris stejnegeri*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range

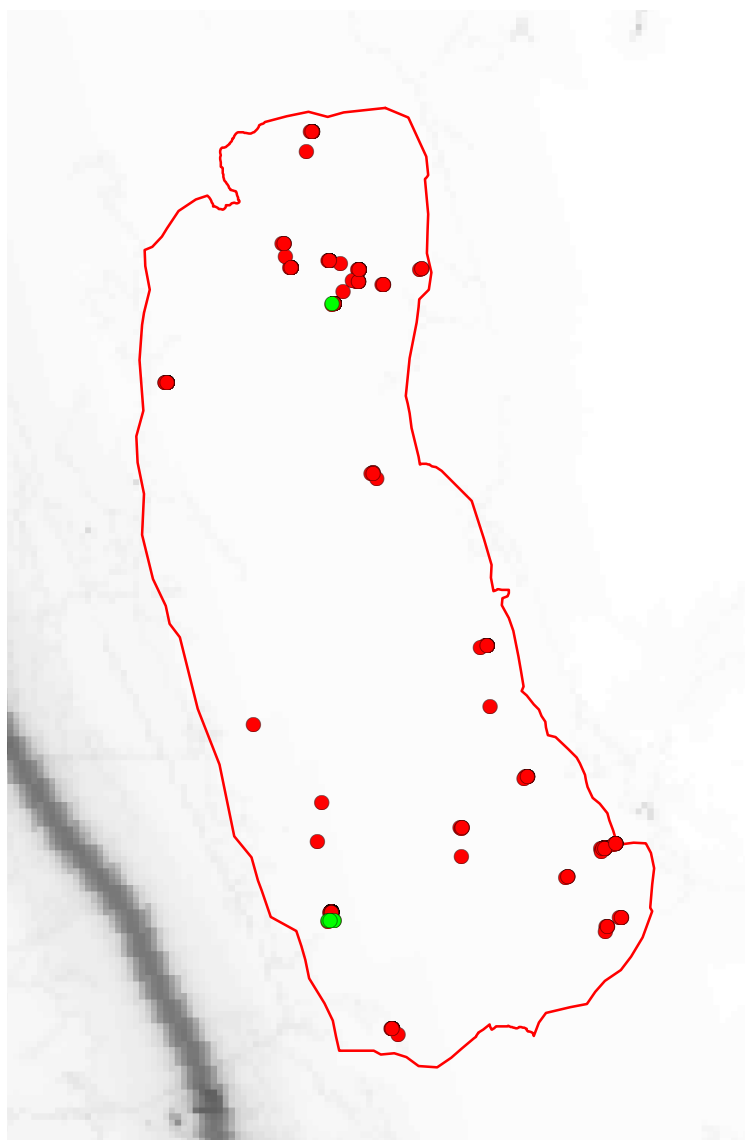
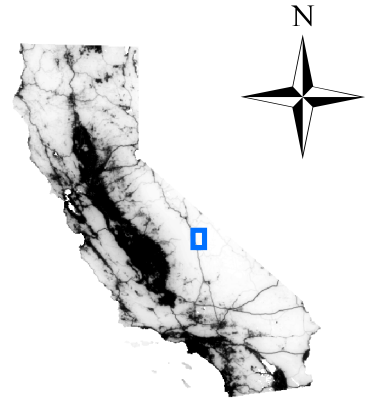


Natural Landscape Value

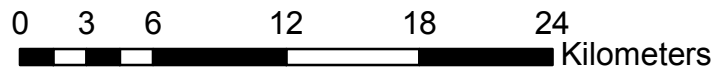
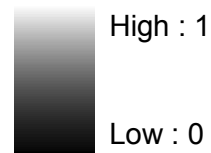


Inyo Mountains Salamander *Batrachoseps campi*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



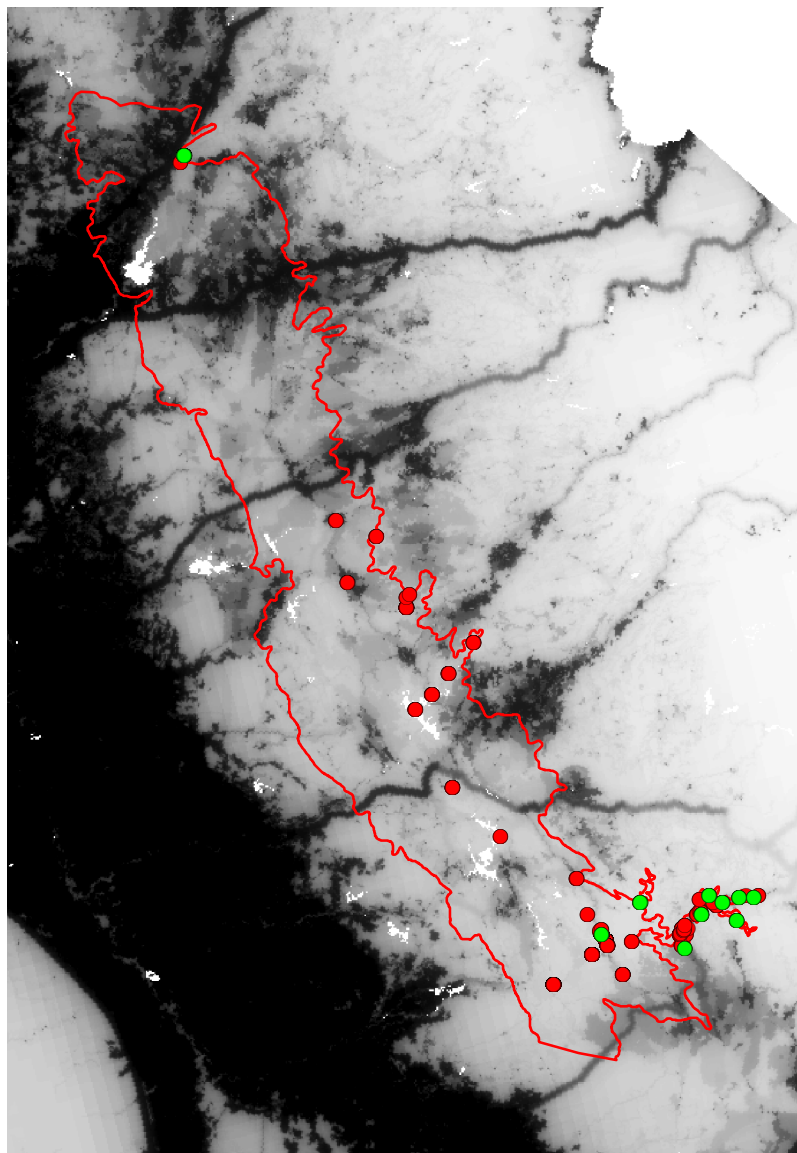
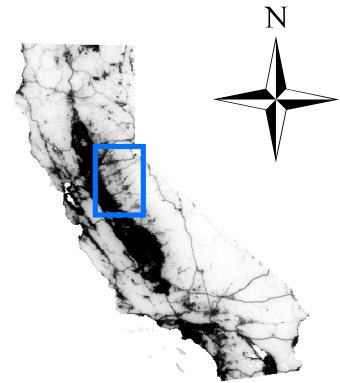
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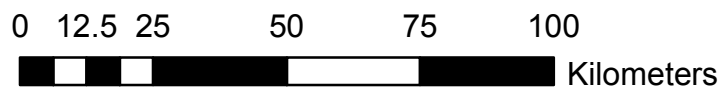
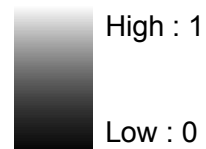
Hell Hollow Slender Salamander *Batrachoseps diabolicus*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

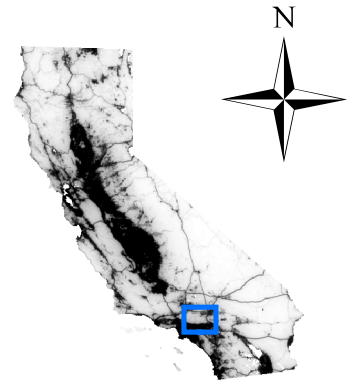
Species range



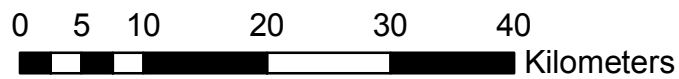
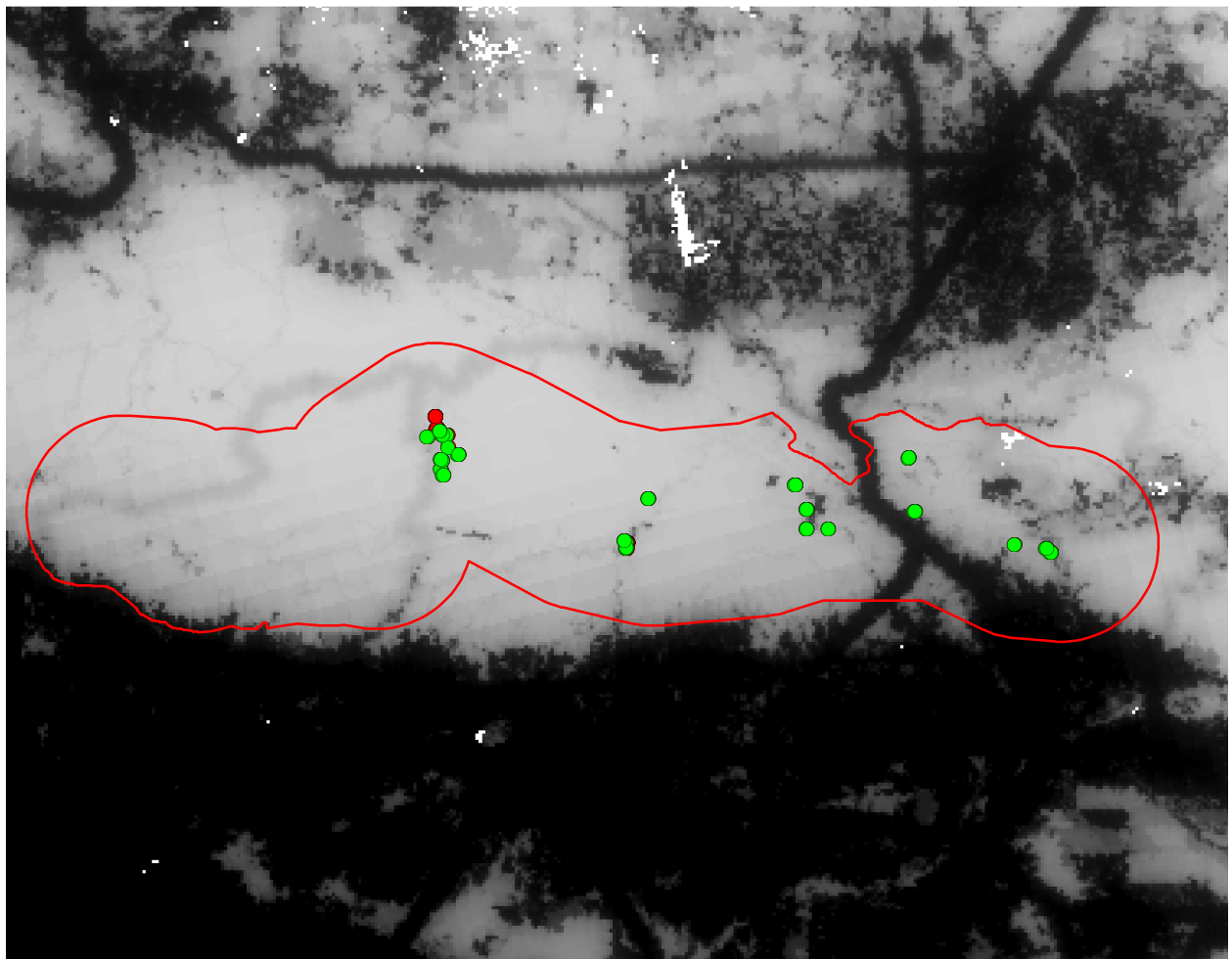
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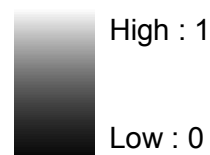
San Gabriel Mountains Slender Salamander *Batrachoseps gabrieli*



- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



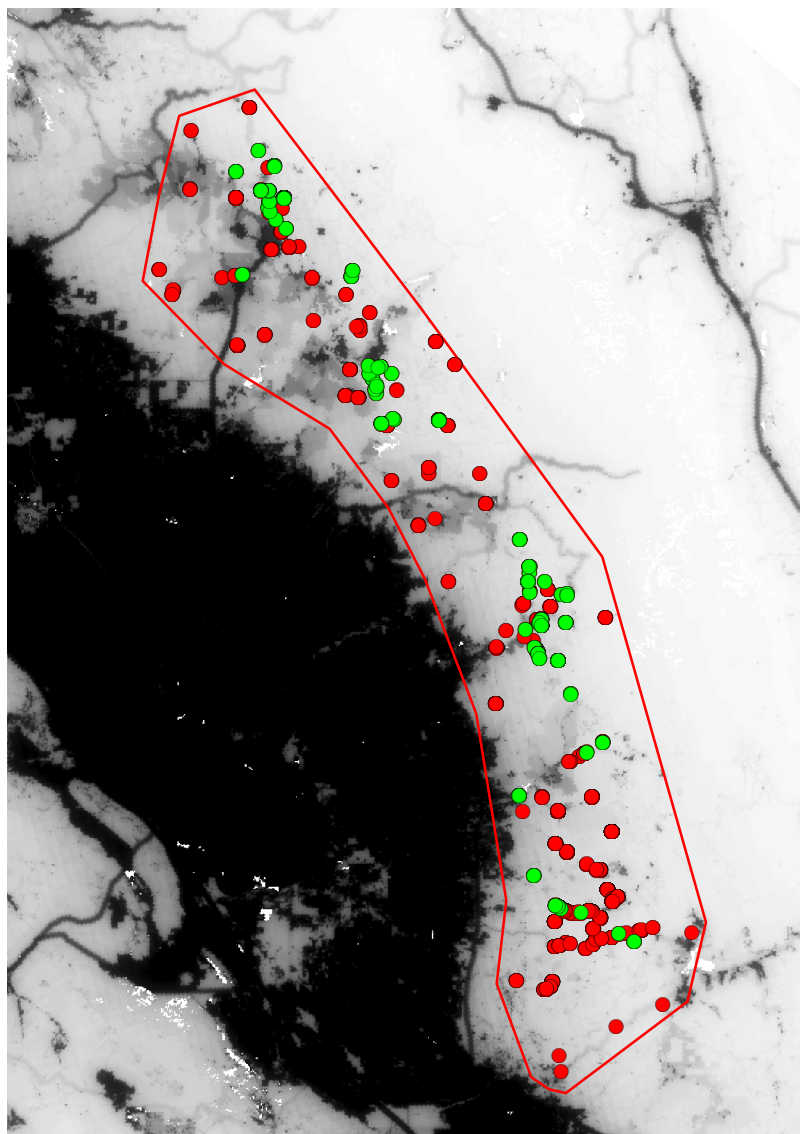
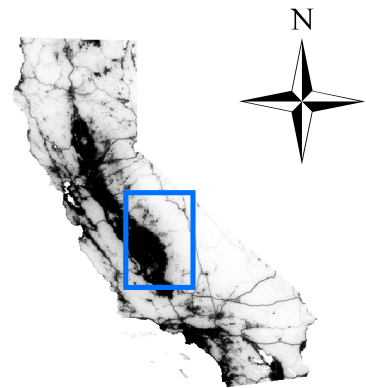
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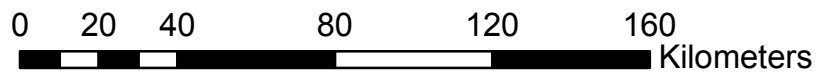
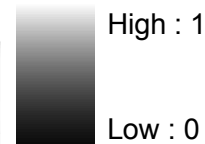
Gregarious Slender Salamander *Batrachoseps gregarius*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



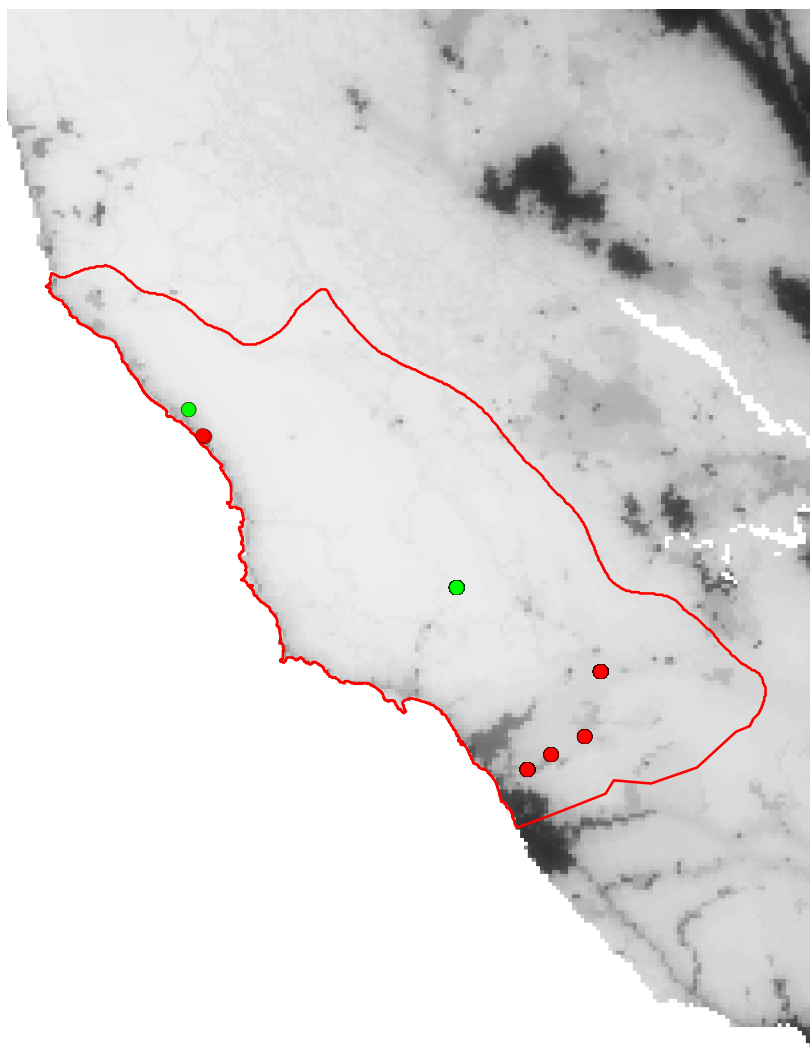
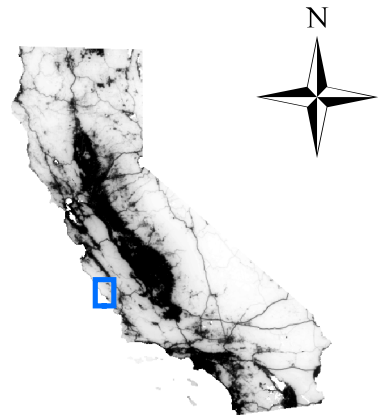
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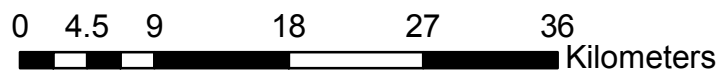
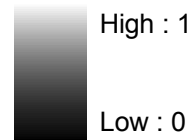
San Simeon Slender Salamander *Batrachoseps incognitus*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

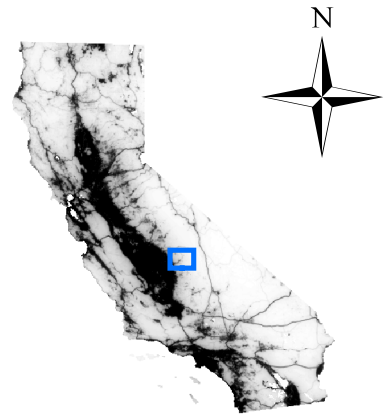
□ Species range



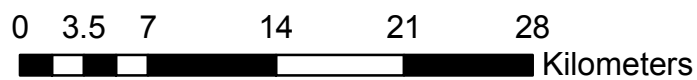
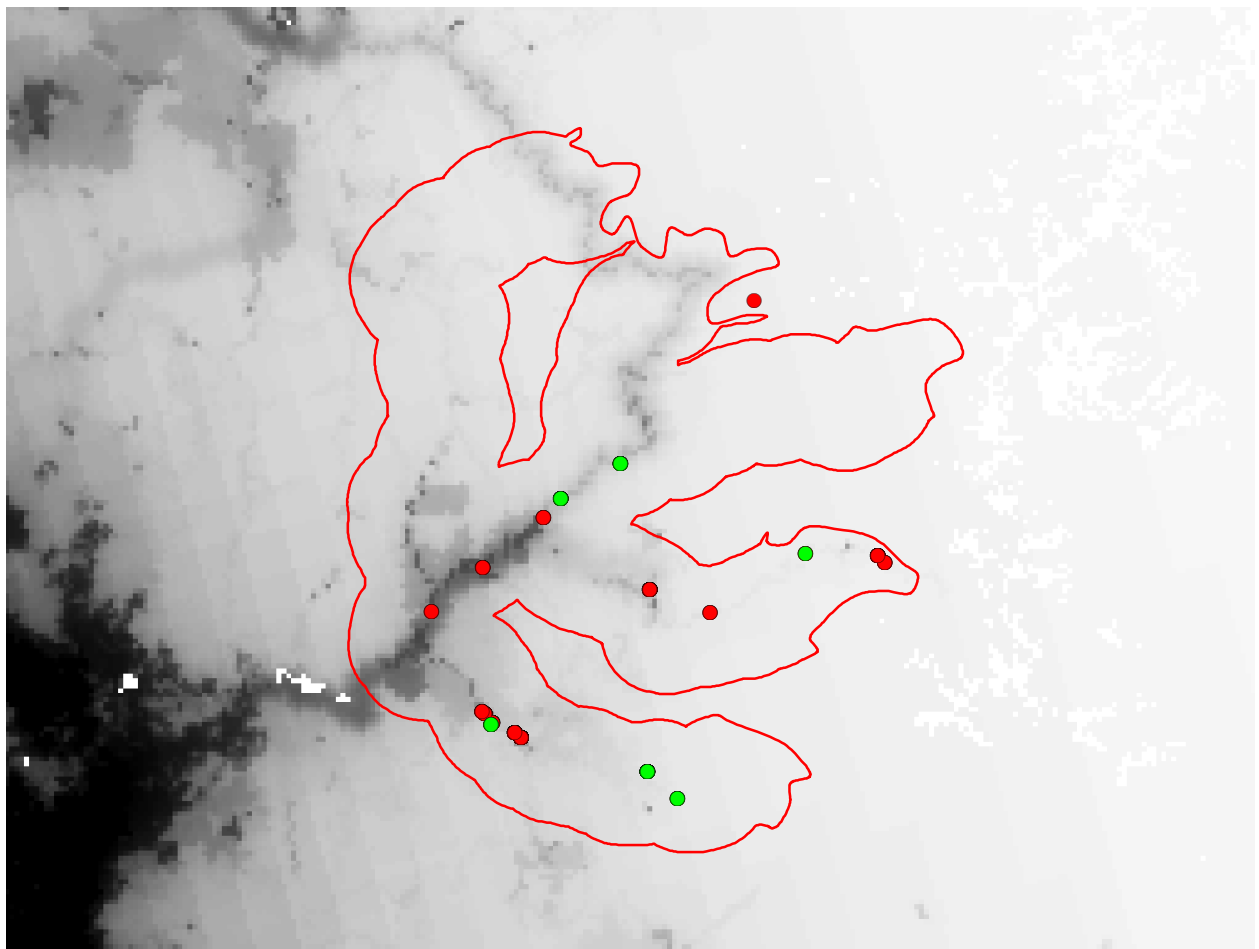
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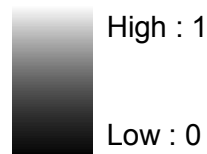
Sequoia Slender Salamander *Batrachoseps kawia*



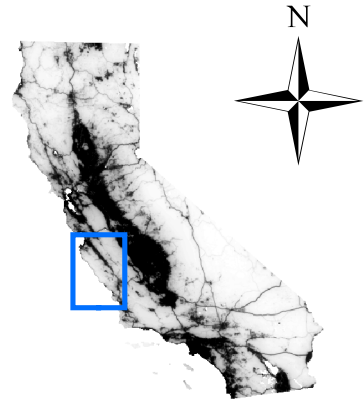
- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



Natural Landscape Value

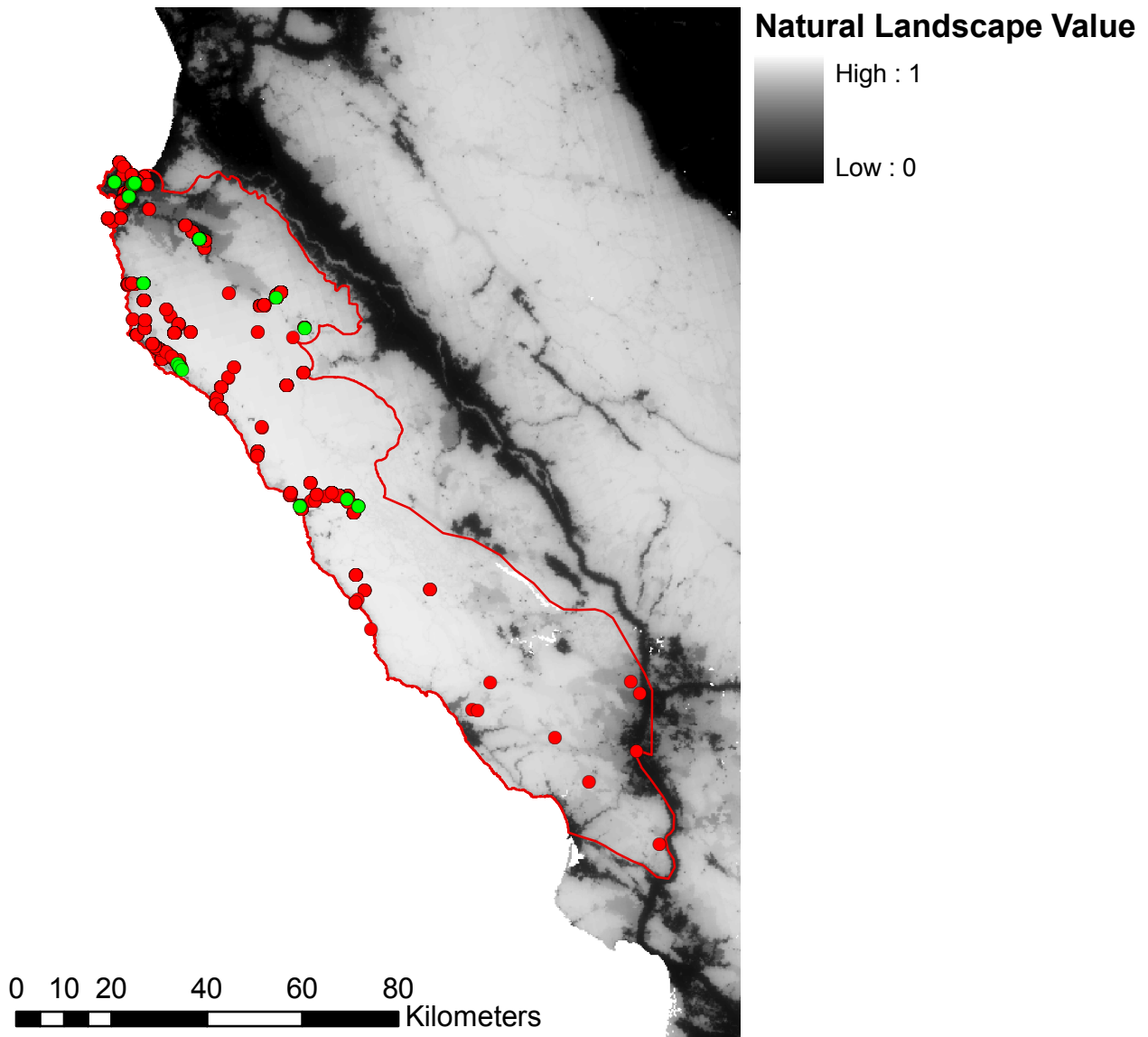


Santa Lucia Mountains Slender Salamander *Batrachoseps luciae*



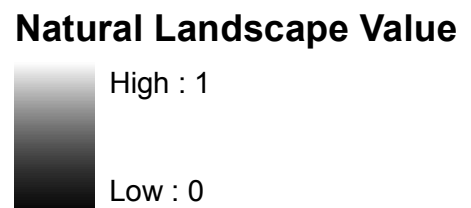
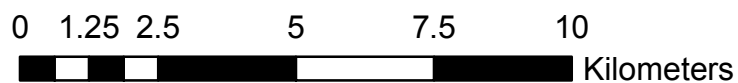
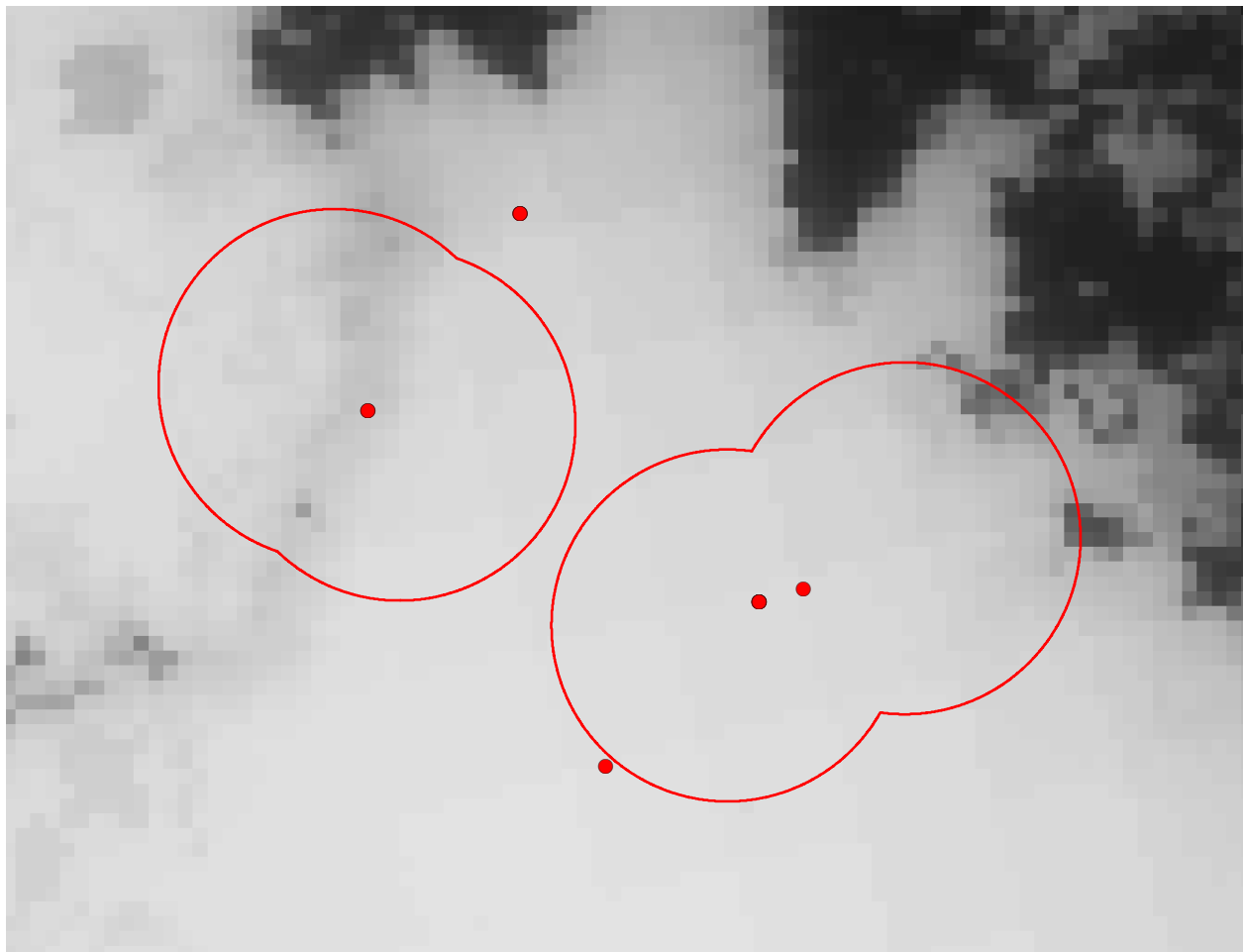
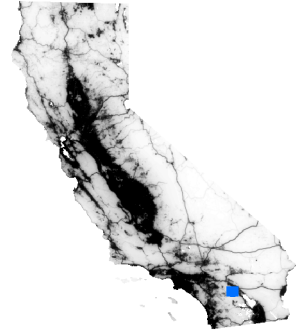
- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

Species range



Desert Slender Salamander *Batrachoseps major aridus*

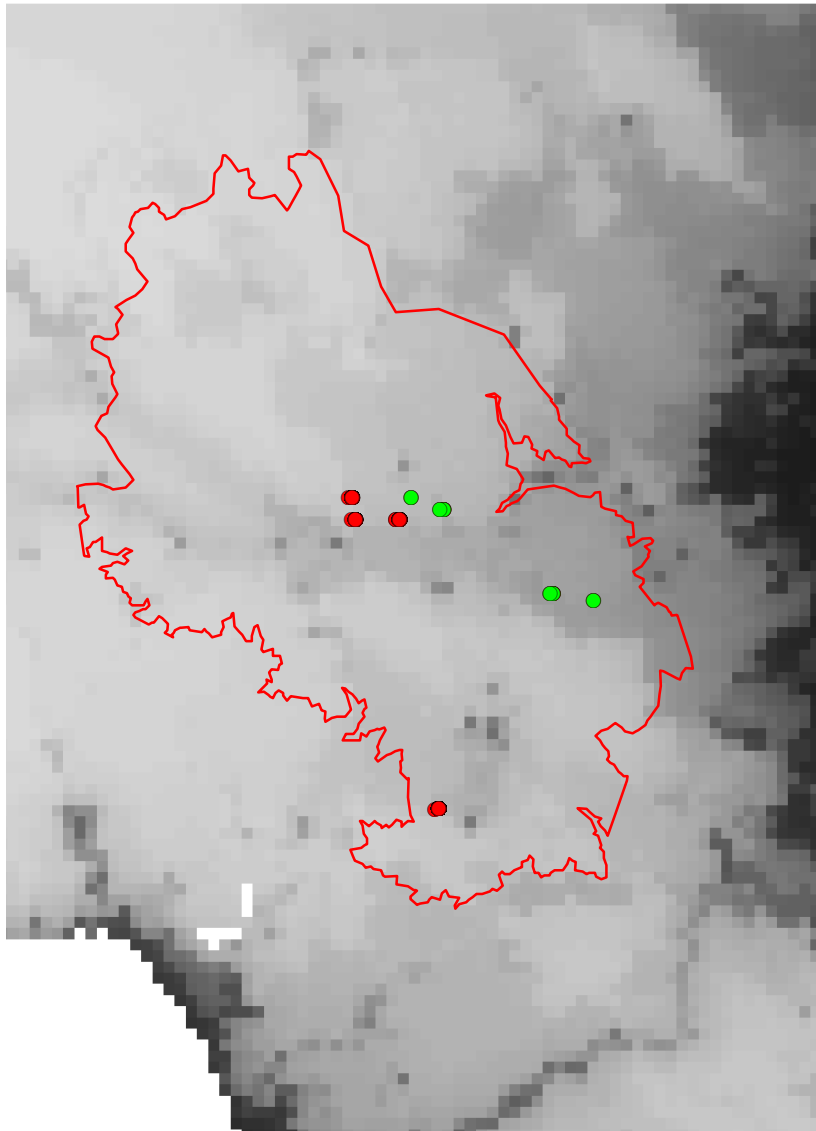
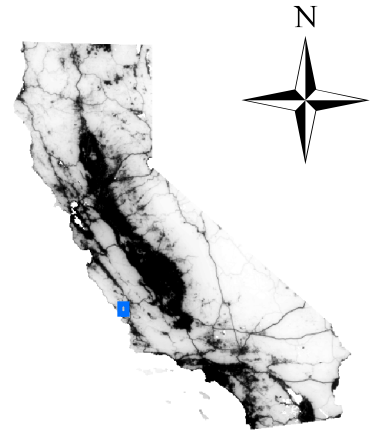
- Historical Occurrences (> 20 years old)
- Species range



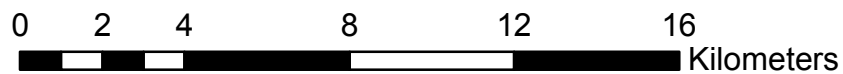
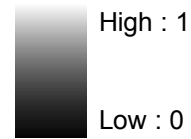
Lesser Slender Salamander *Batrachoseps minor*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

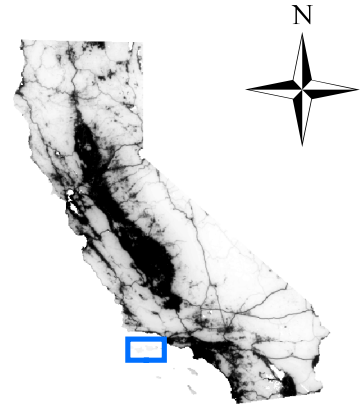
□ Species range



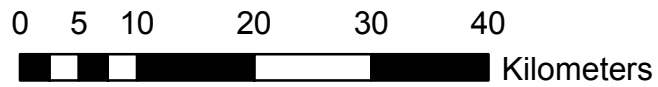
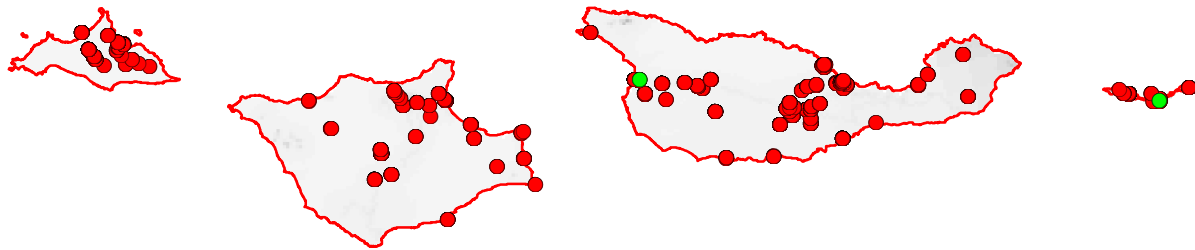
Natural Landscape Value



Channel Islands Slender Salamander *Batrachoseps pacificus*



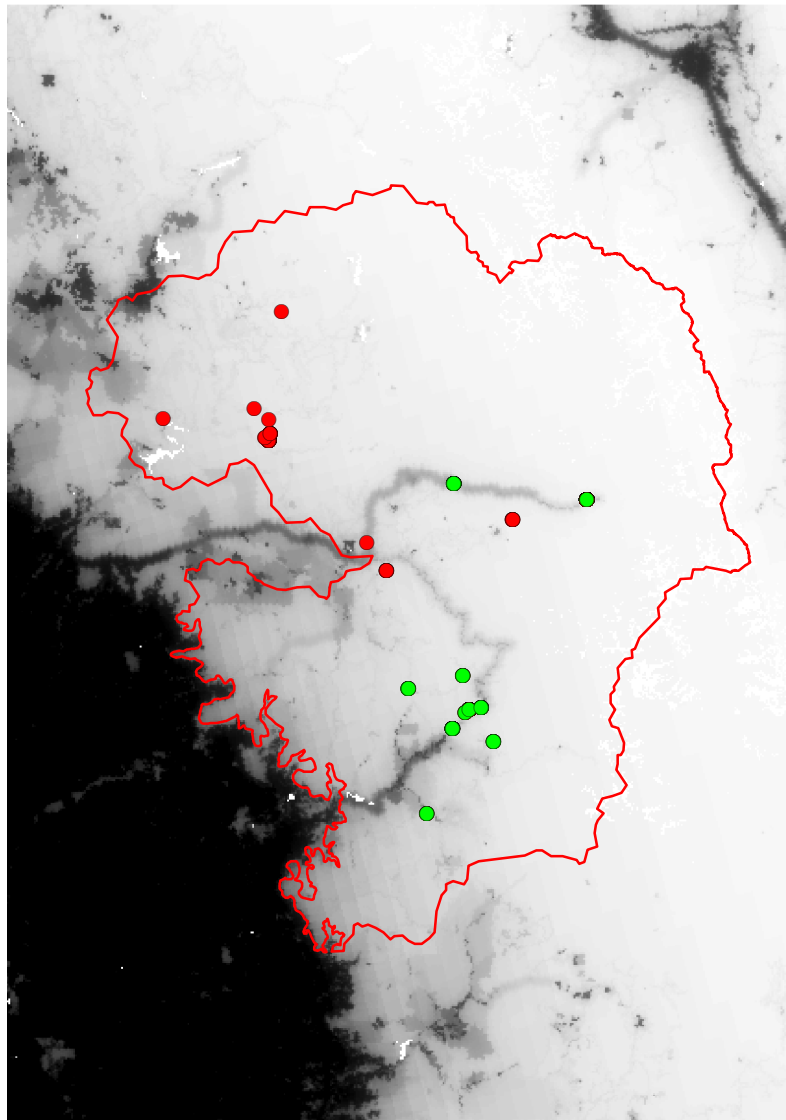
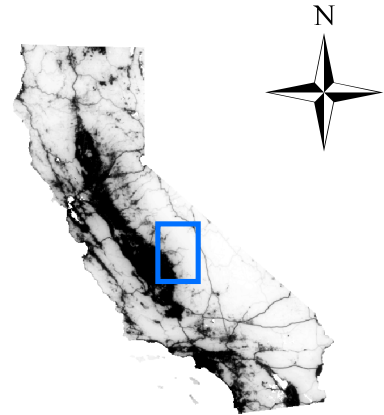
- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



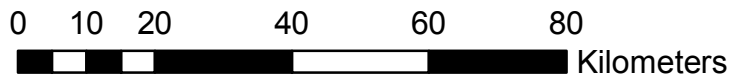
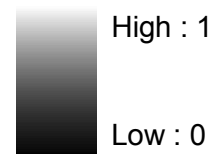
Kings River Slender Salamander *Batrachoseps regius*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

Species range



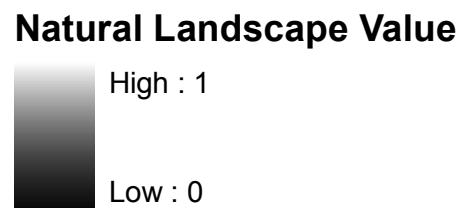
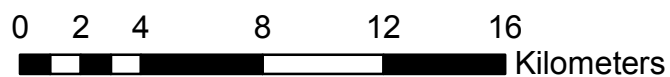
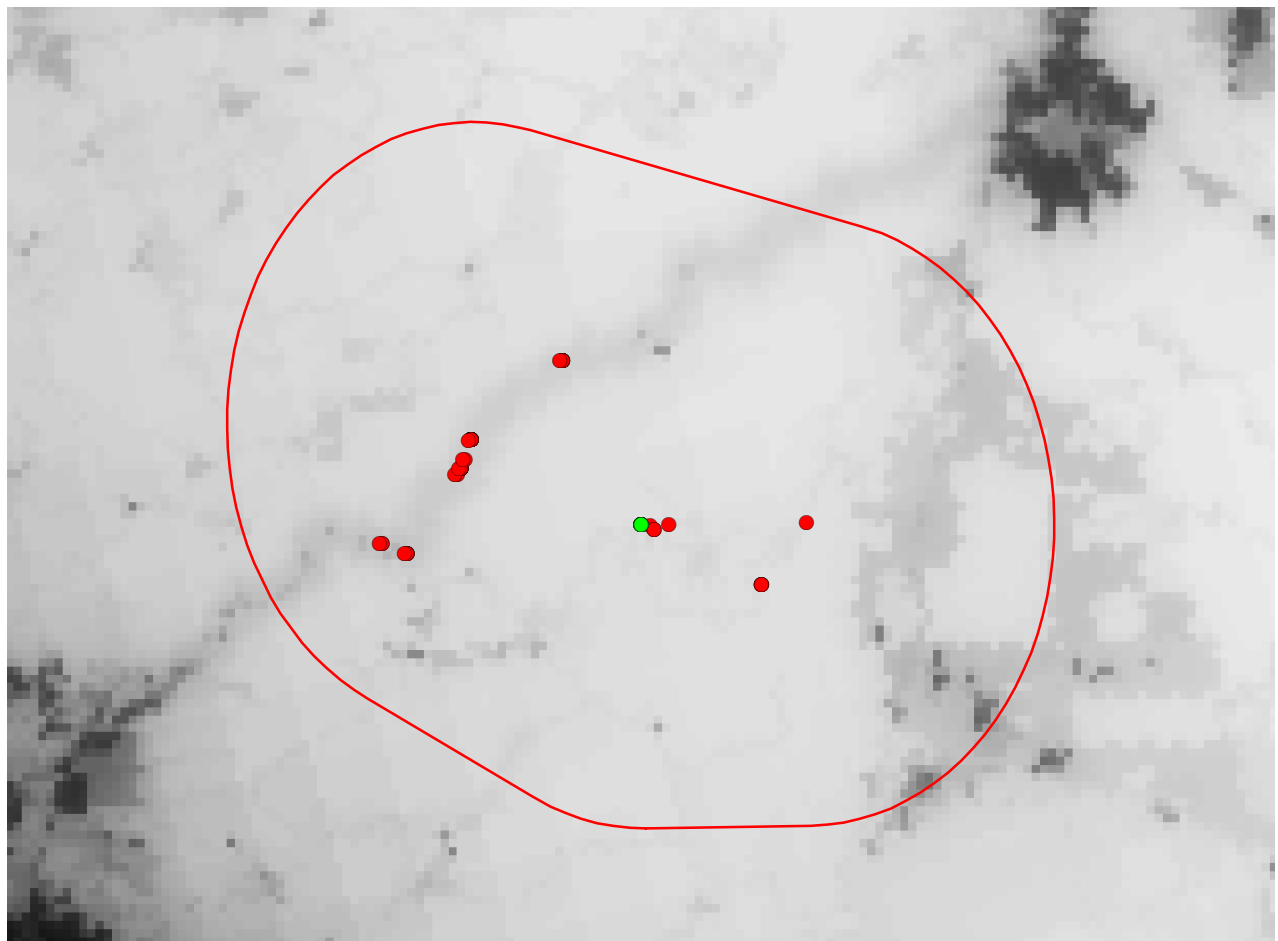
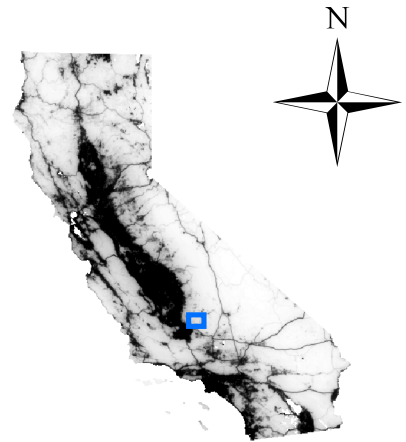
Natural Landscape Value



Relictual Slender Salamander *Batrachoseps relictus*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

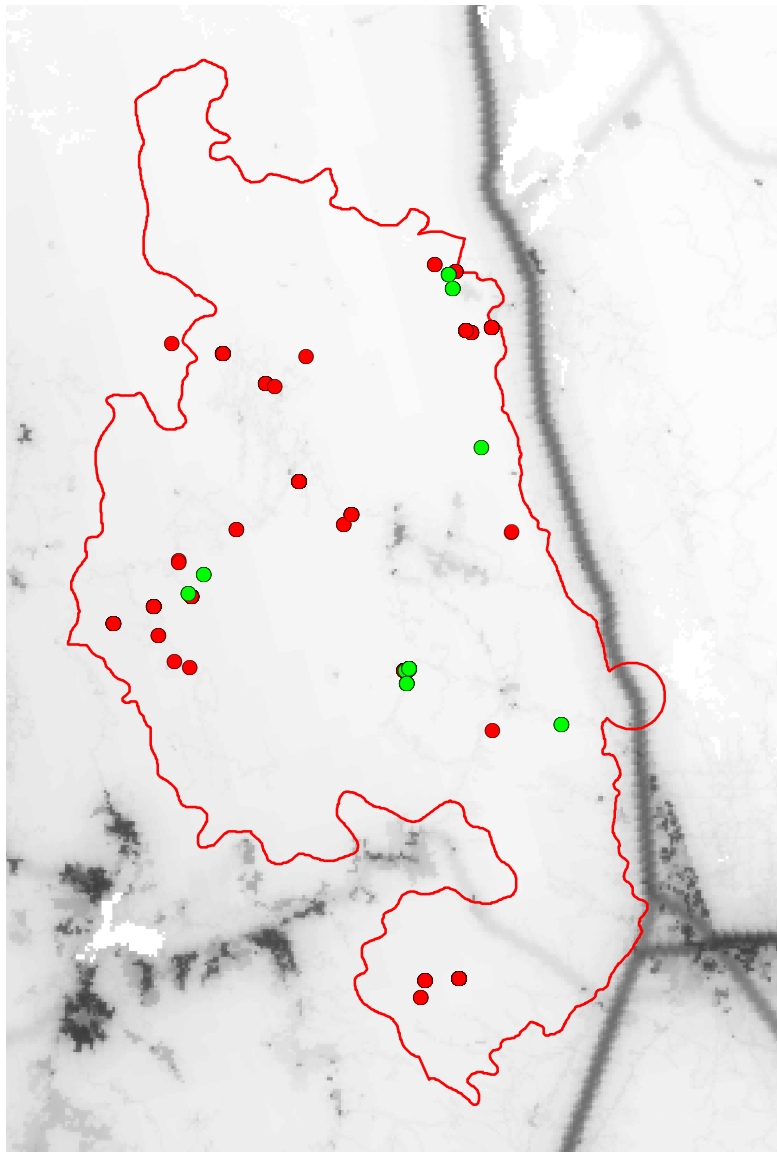
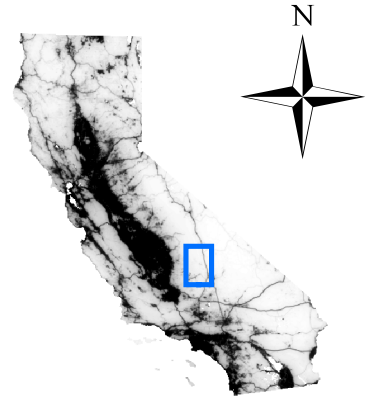
□ Species range



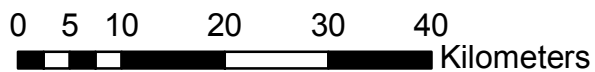
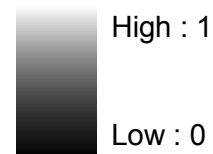
Kern Plateau Salamander *Batrachoseps robustus*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



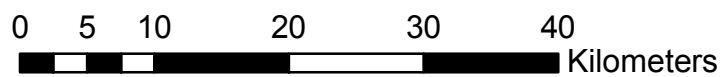
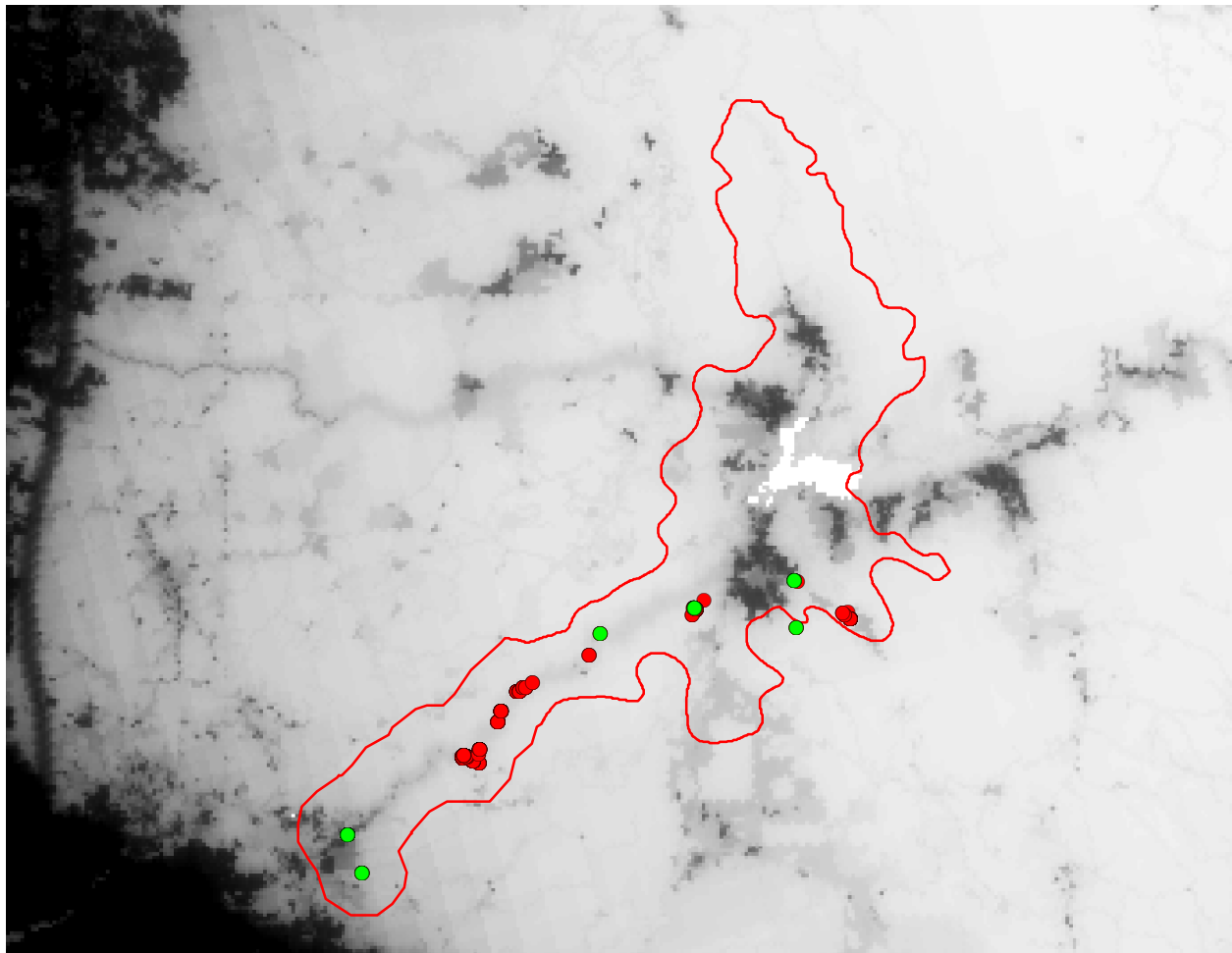
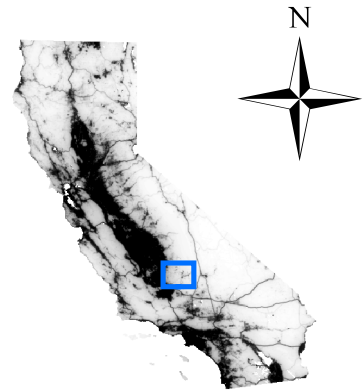
Natural Landscape Value



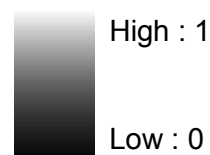
Kern Canyon Slender Salamander *Batrachoseps simatus*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range

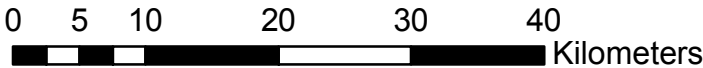
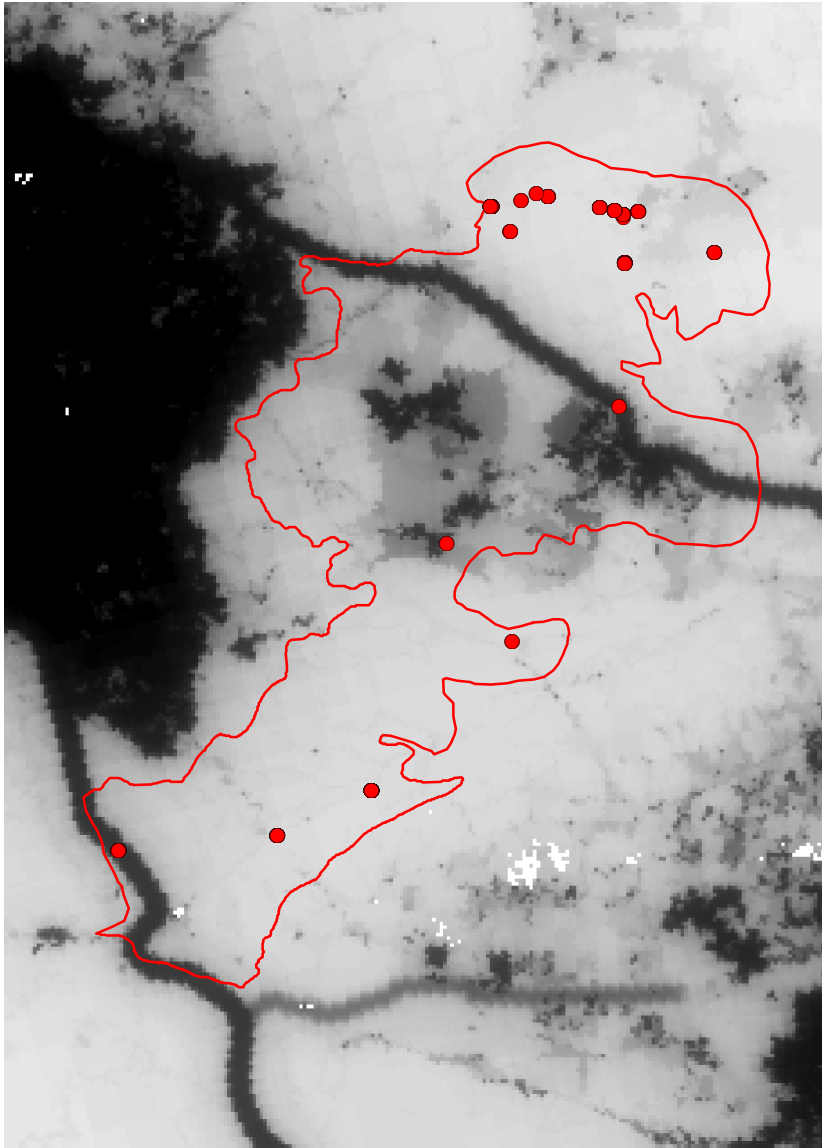
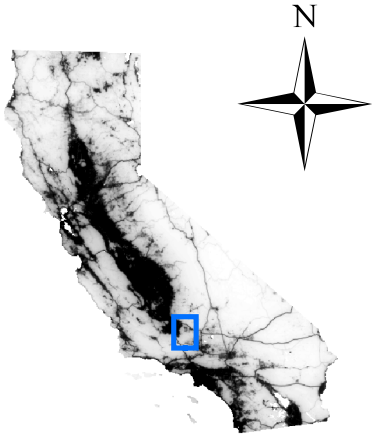


Natural Landscape Value



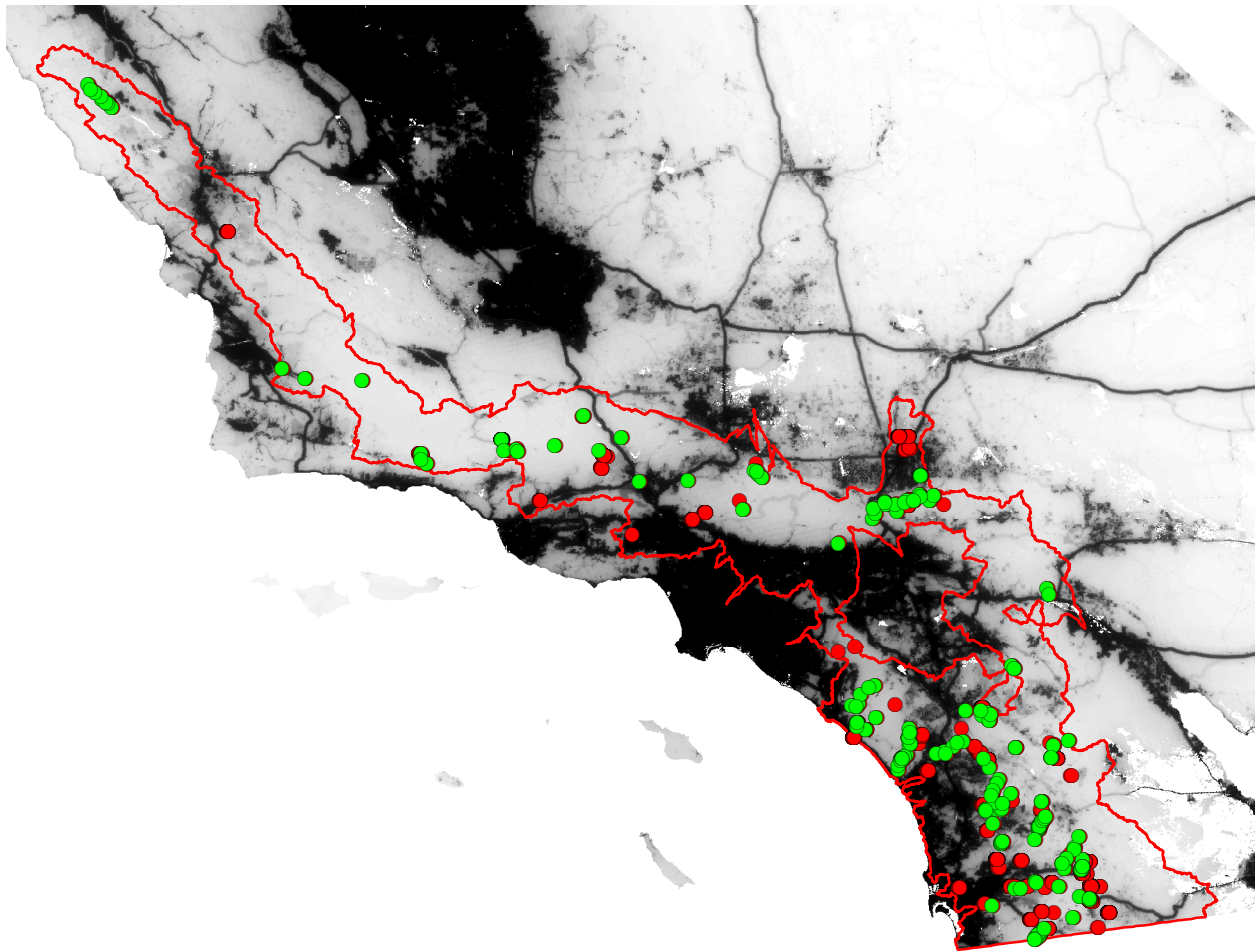
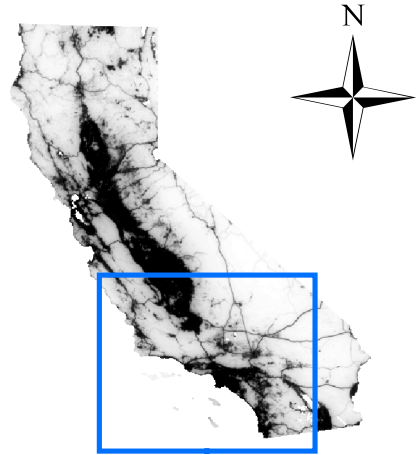
Tehachapi Slender Salamander *Batrachoseps stebbinsi*

- Historical occurrences (> 20 years old)
- Species range

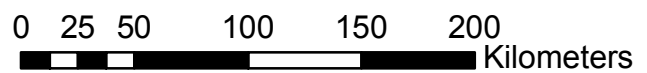
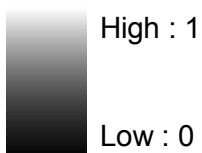


Arroyo Toad *Bufo californicus*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



Natural Landscape Value

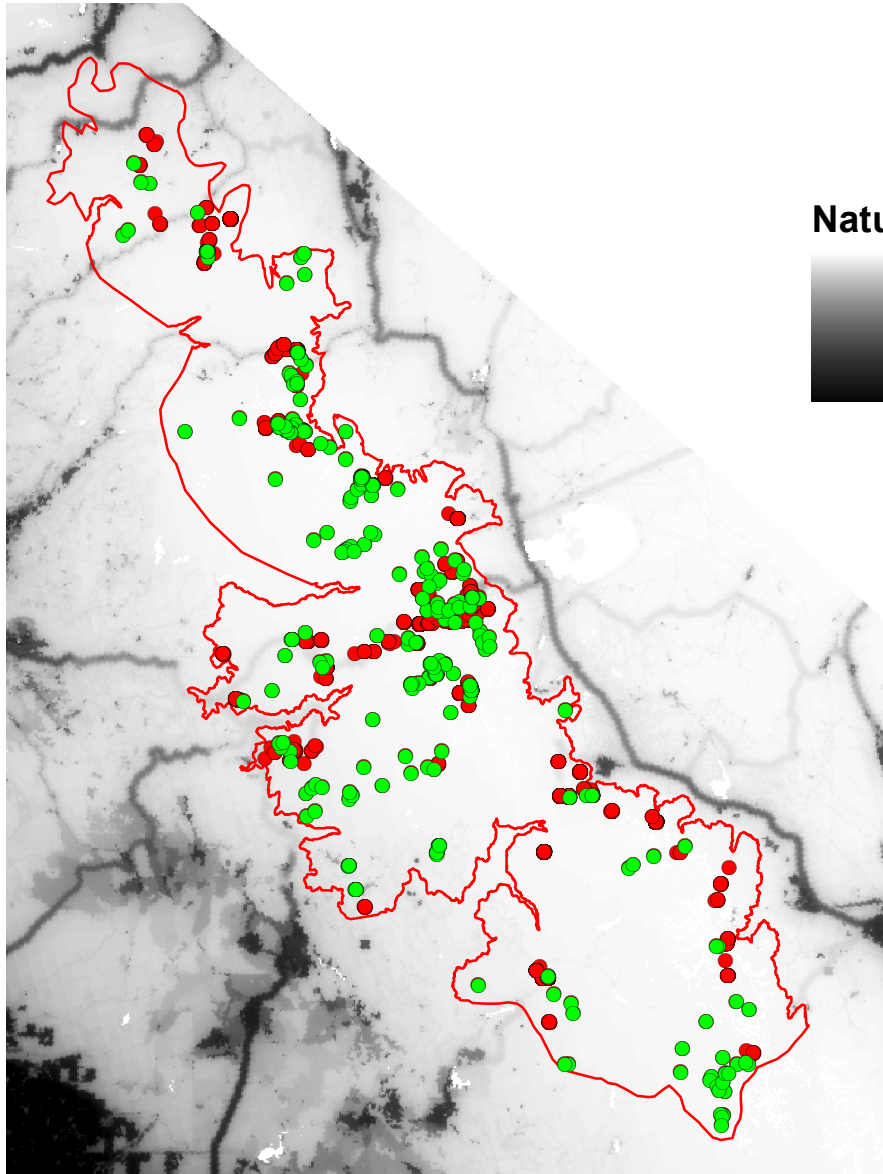
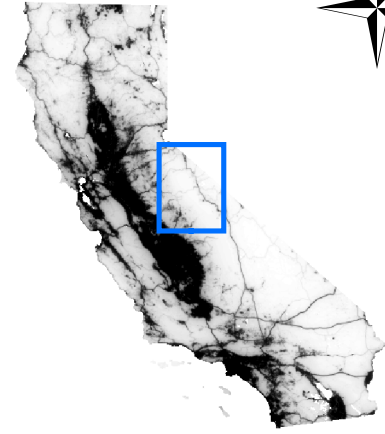


Yosemite Toad *Bufo canorus*

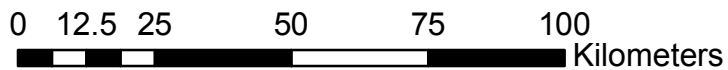
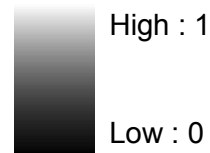


- Modern occurrences (<20 years old)
- Historical occurrences (> 20 years old)

Species range



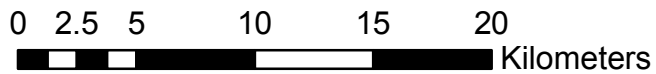
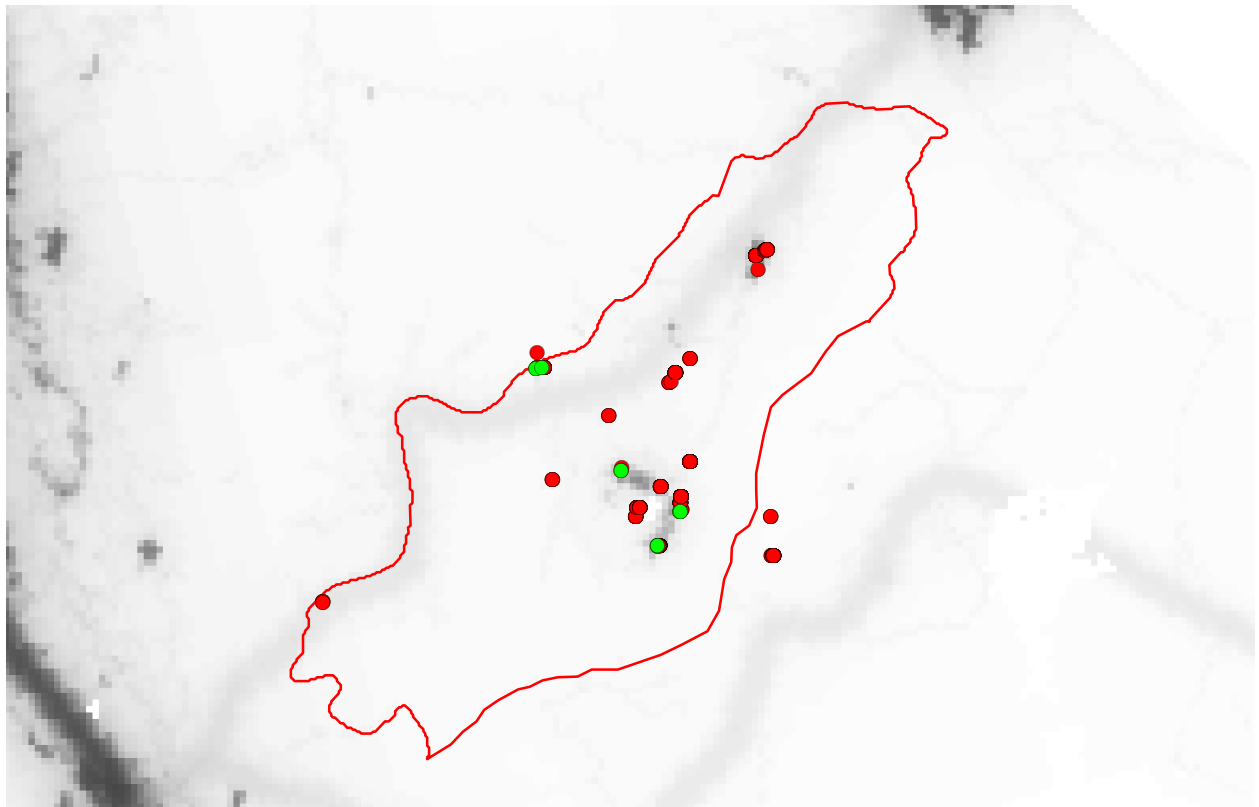
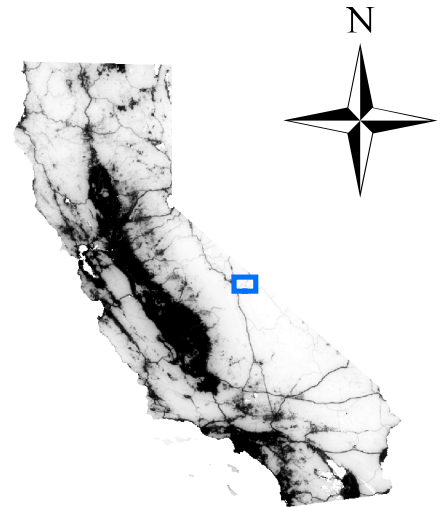
Natural Landscape Value



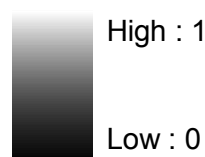
Black Toad *Bufo exsul*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



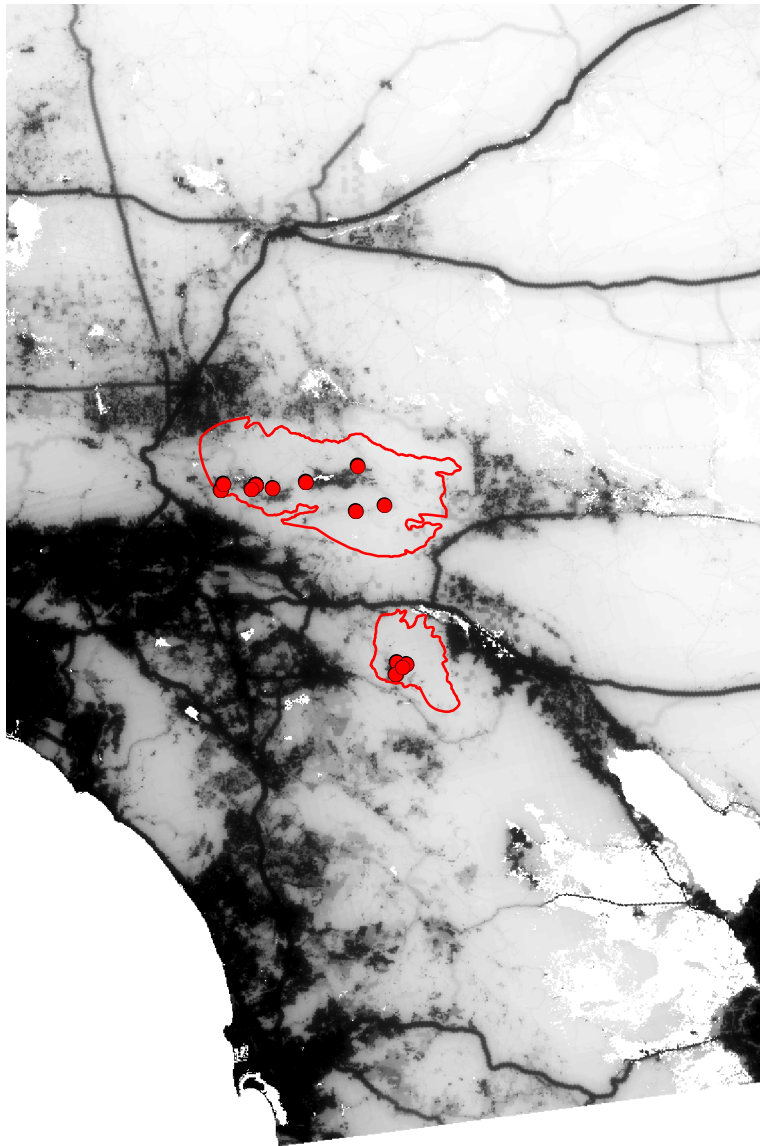
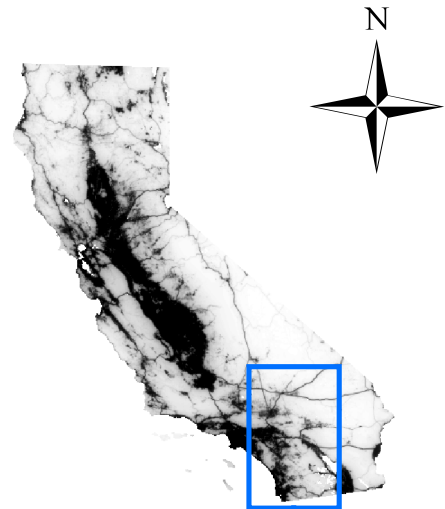
Natural Landscape Value



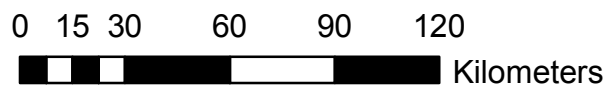
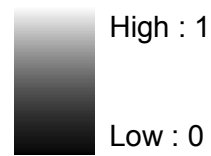
Southern Rubber Boa

Charina bottae umbratica

- Historical Occurrences (> 20 years old)
- Species range



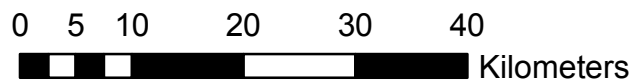
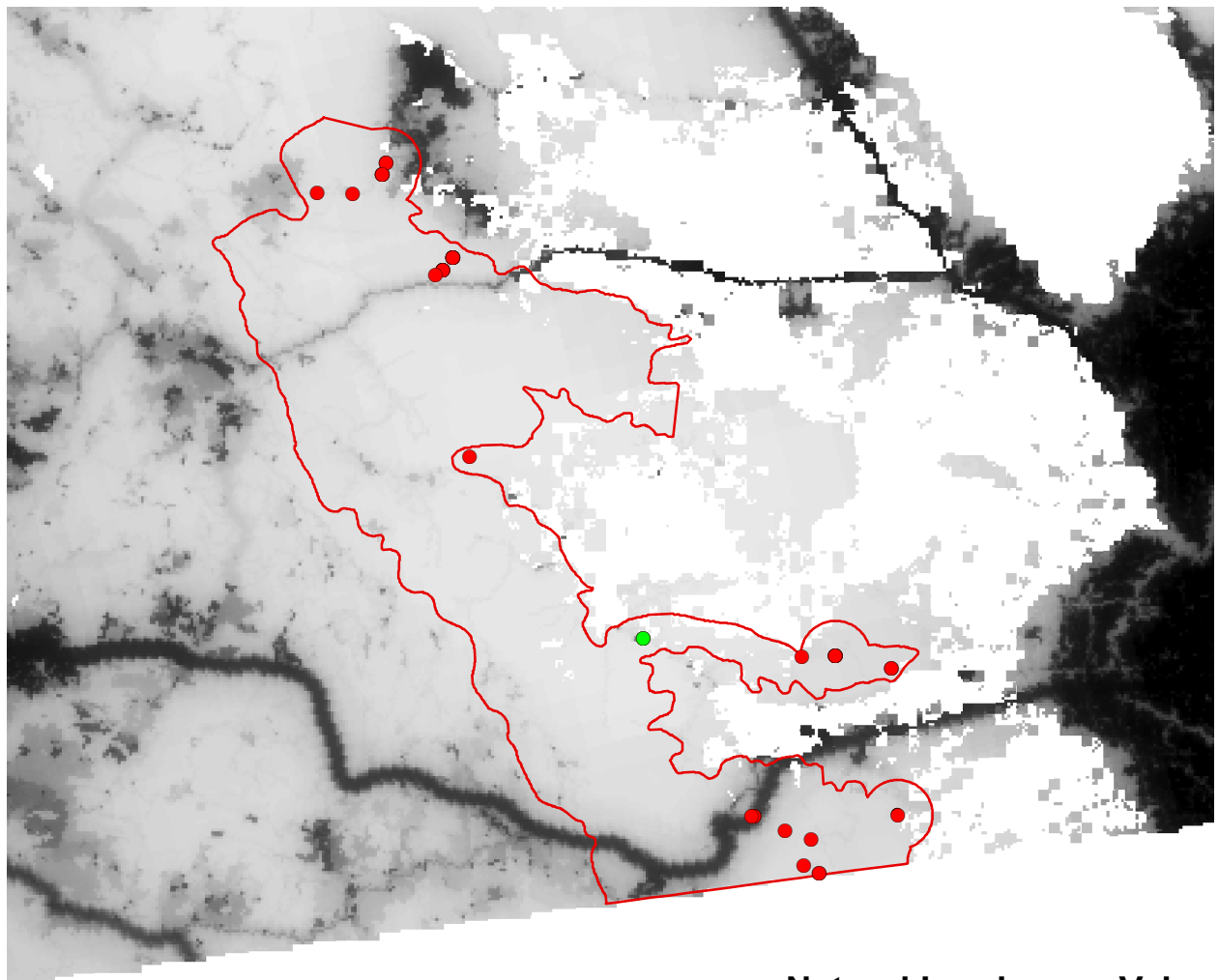
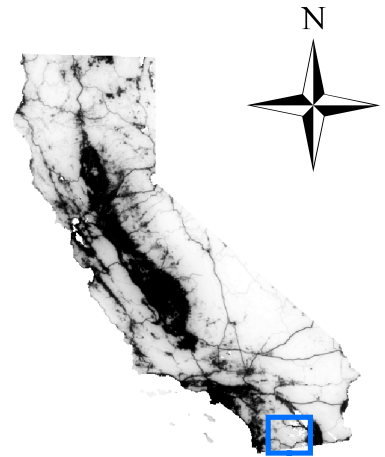
Natural Landscape Value



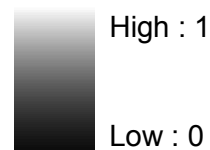
Barefoot Gecko *Coleonyx switaki*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



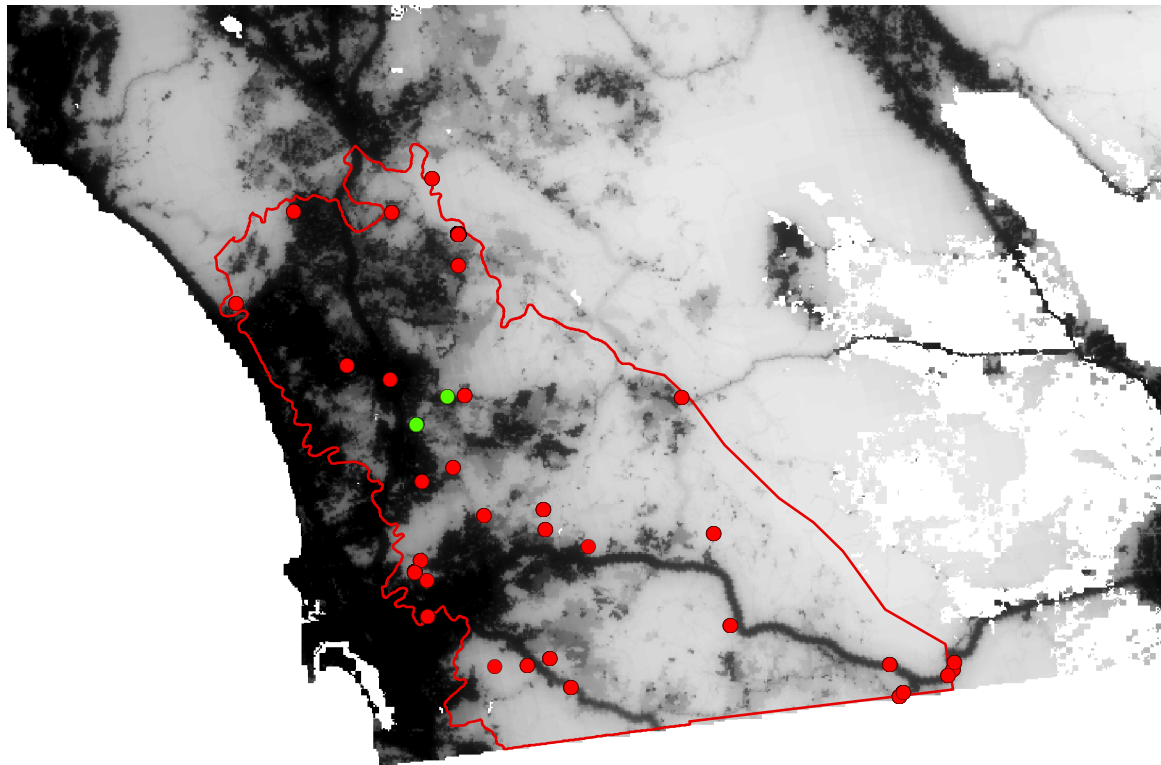
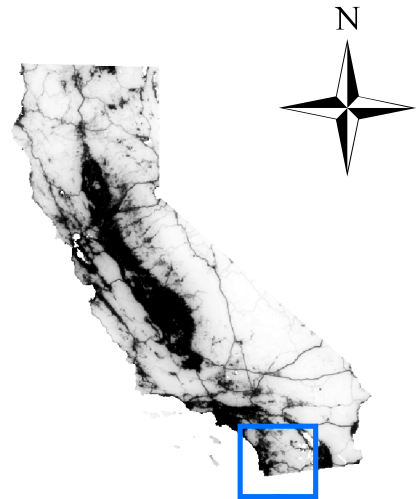
Natural Landscape Value



San Diego Banded Gecko *Coleonyx variegatus abbotti*

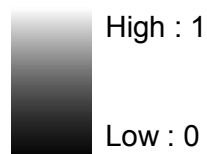
- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range

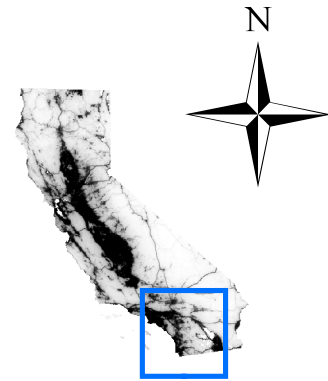


0 10 20 40 60 80
Kilometers

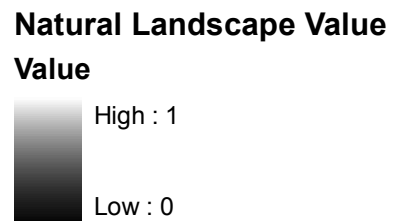
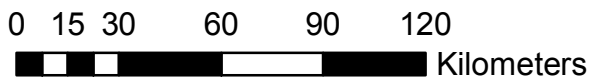
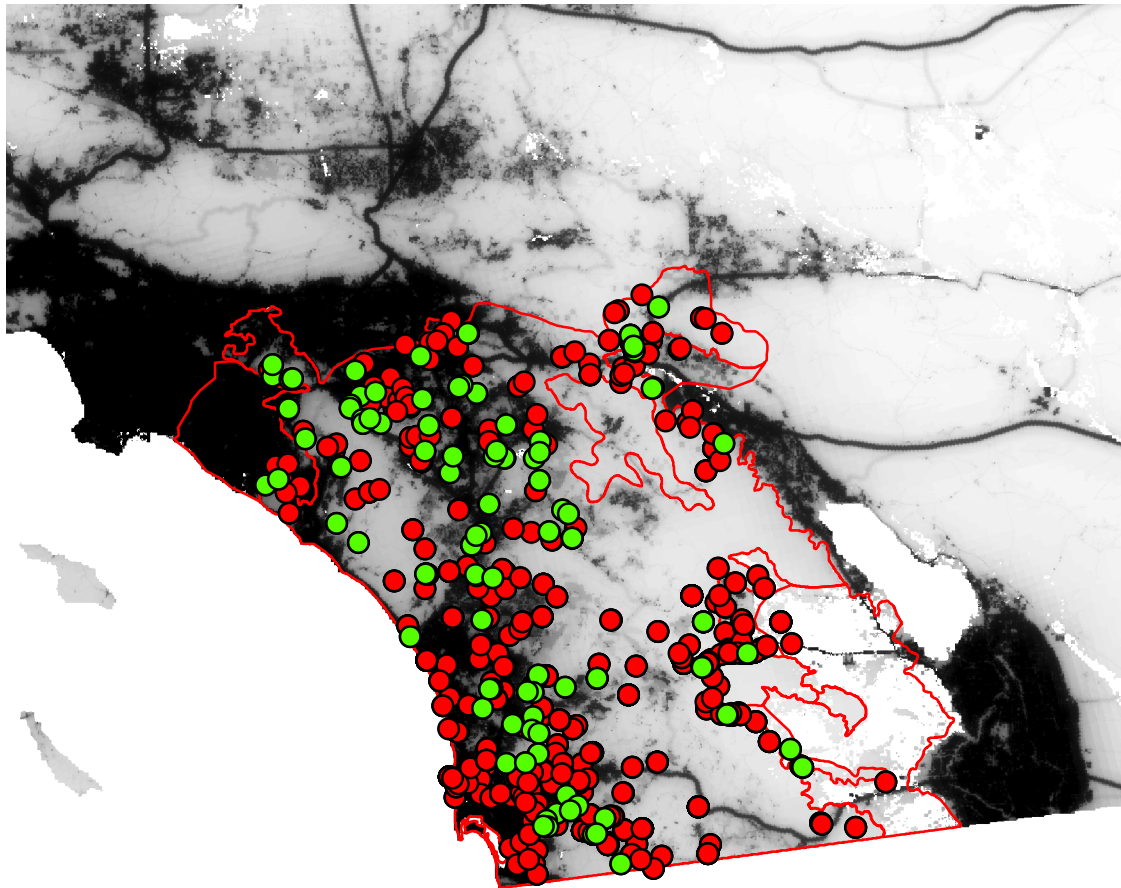
Natural Landscape Value



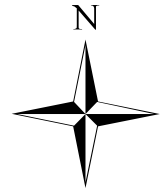
Red Diamond Rattlesnake *Crotalus ruber*



- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range

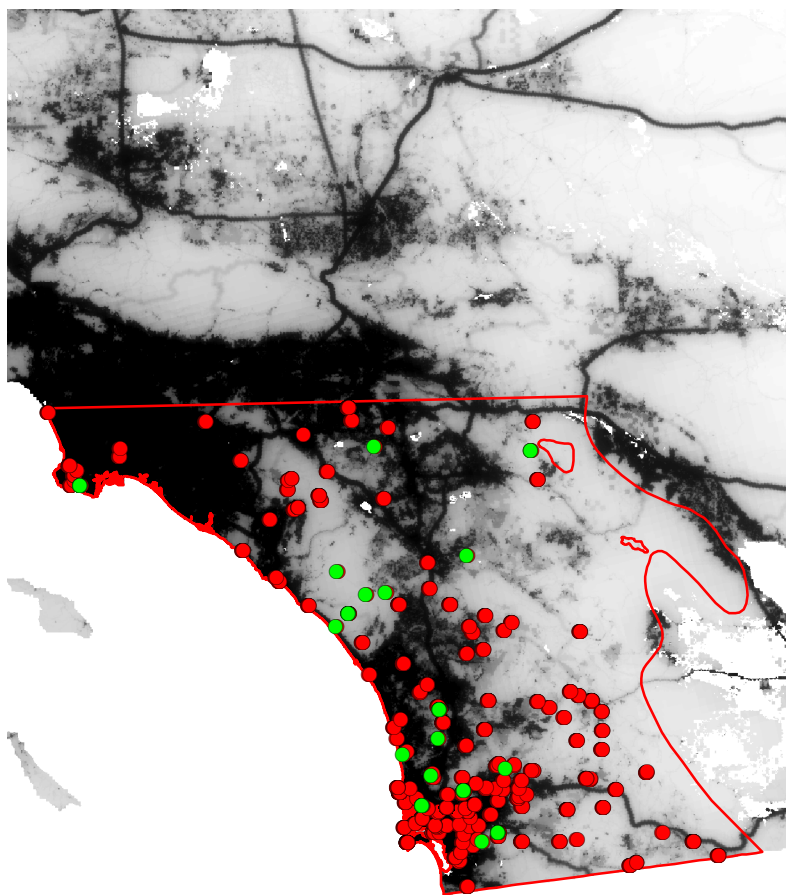
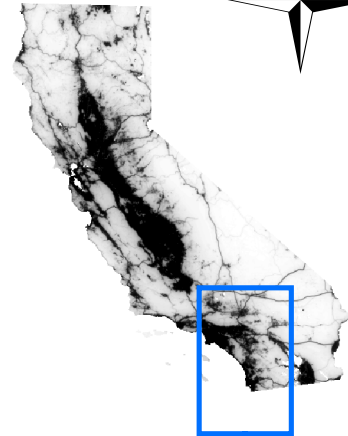


Ring-necked Snake *Diadophis punctatus* "Southern Clade"

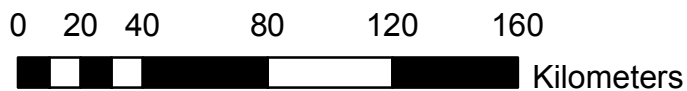
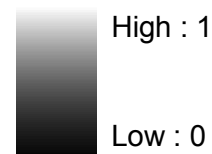


- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



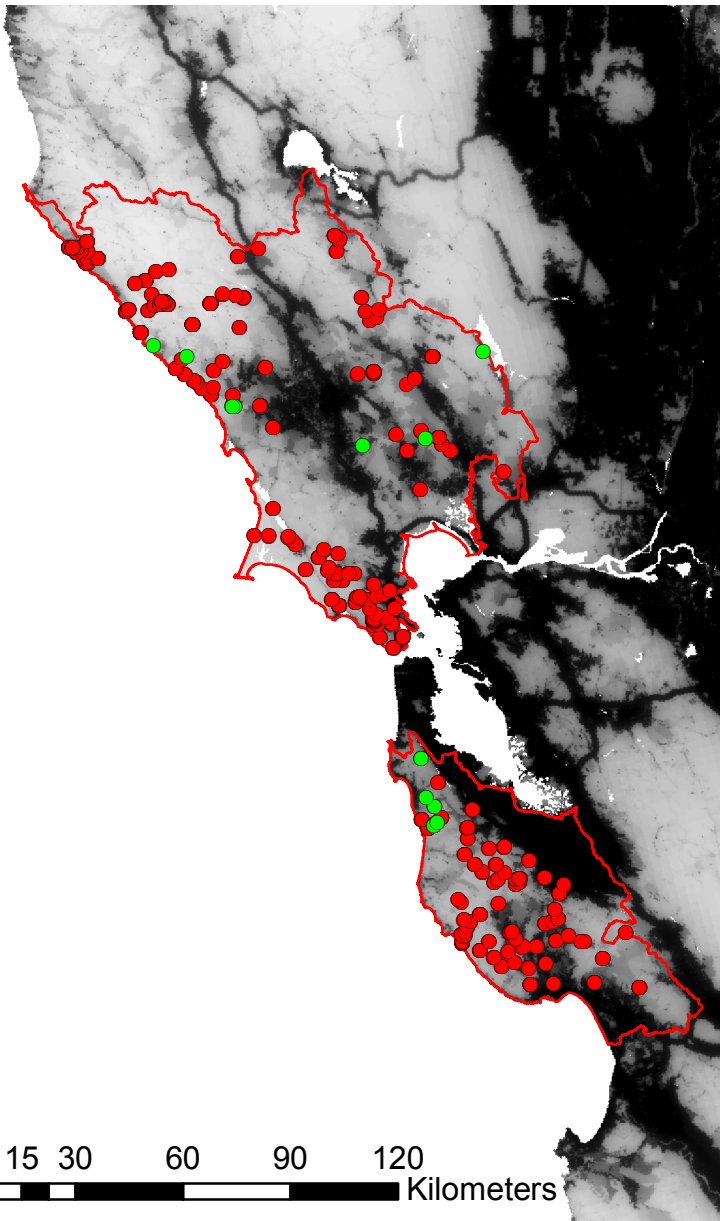
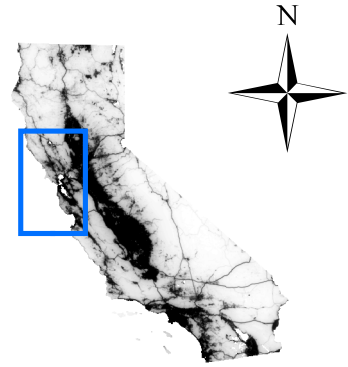
Natural Landscape Value
Value



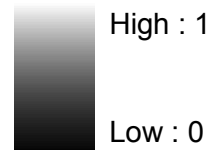
California Giant Salamander *Dicamptodon ensatus*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



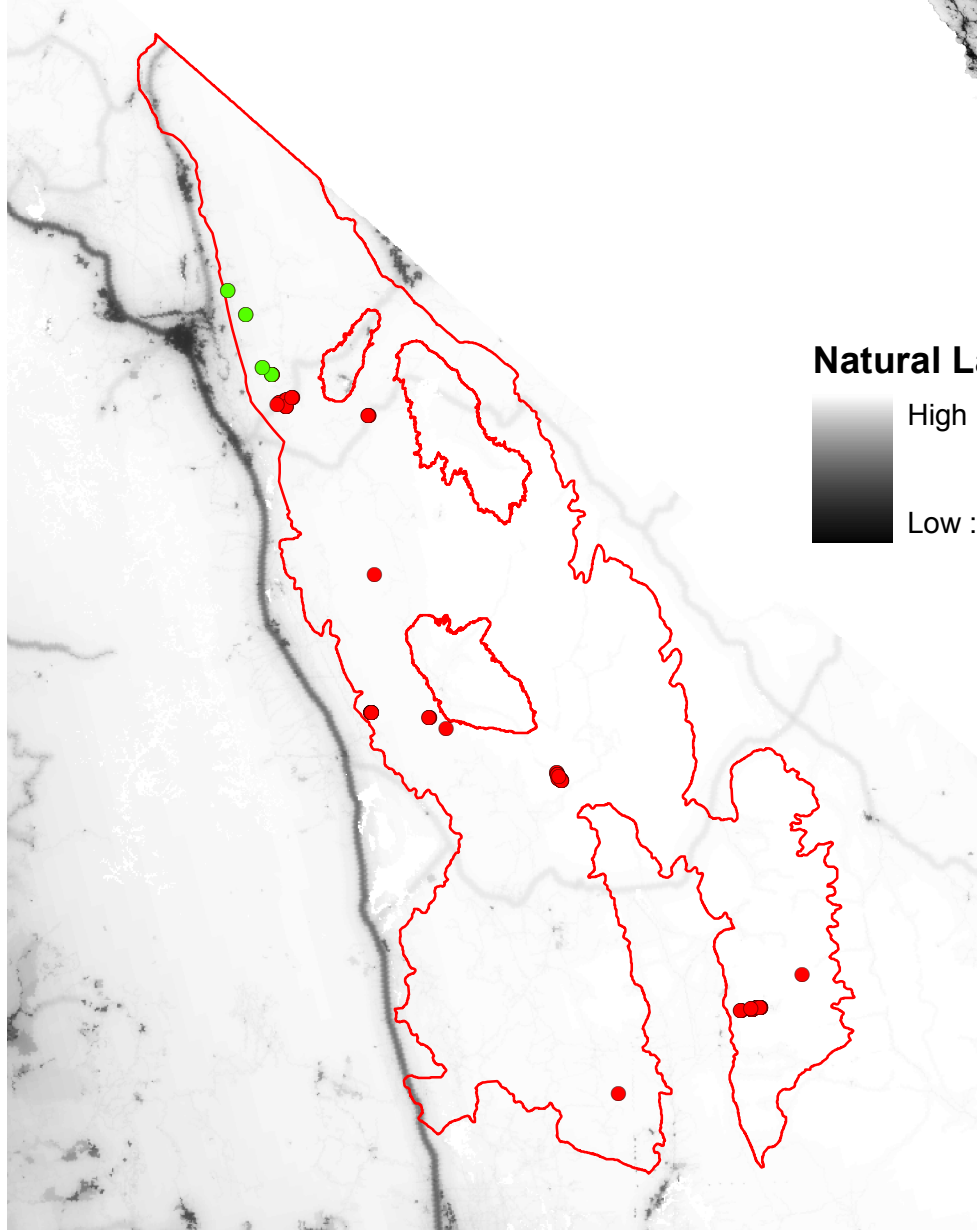
Natural Landscape Value



Panamint Alligator Lizard *Elgaria panamintina*

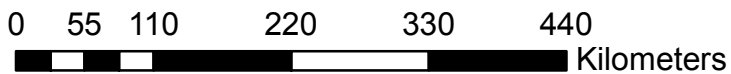
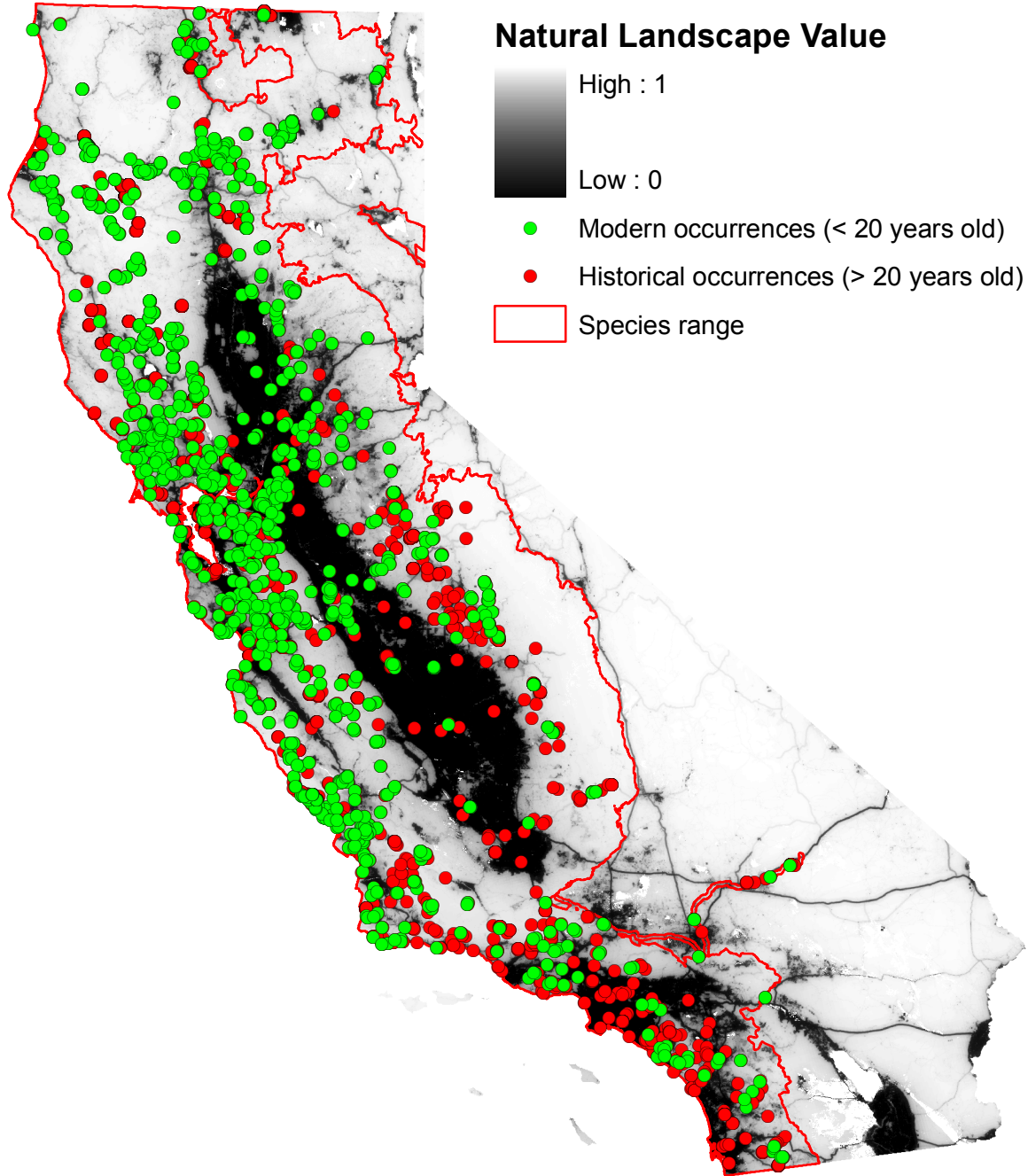
- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

Species range



0 12.5 25 50 75 100 Kilometers

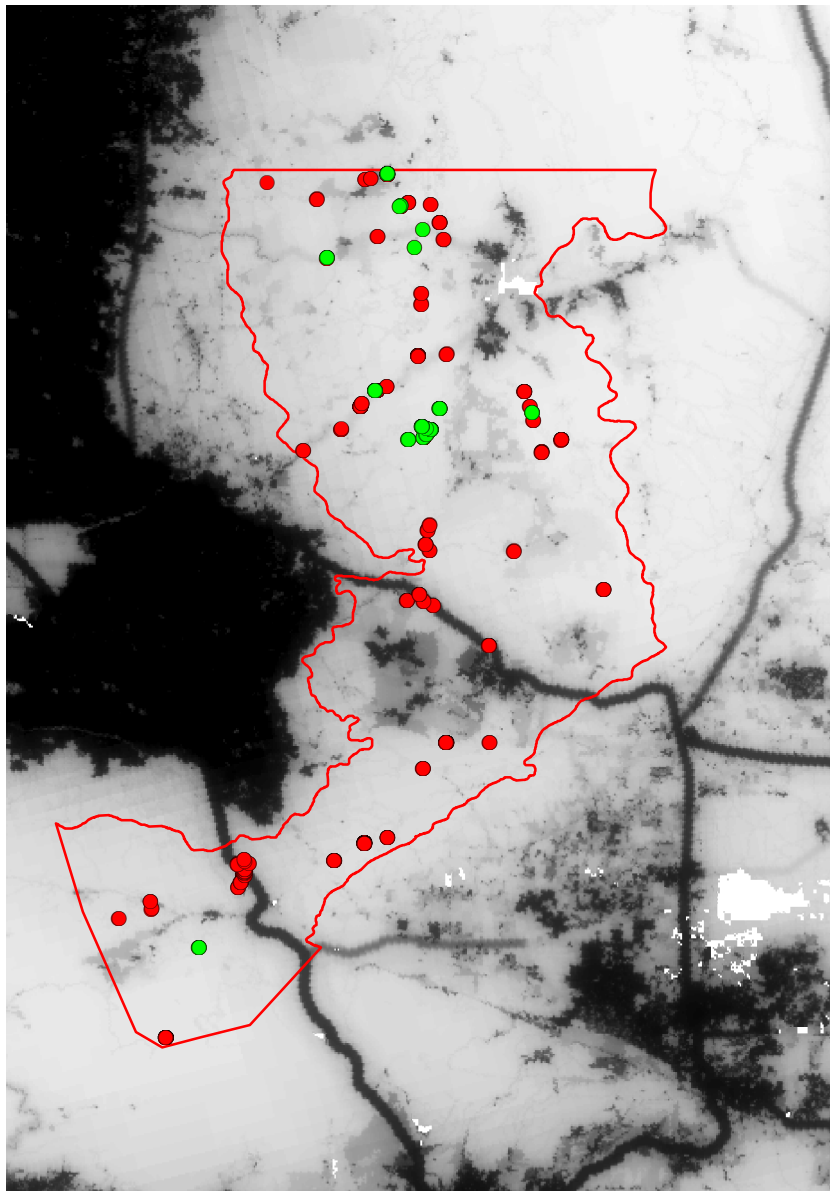
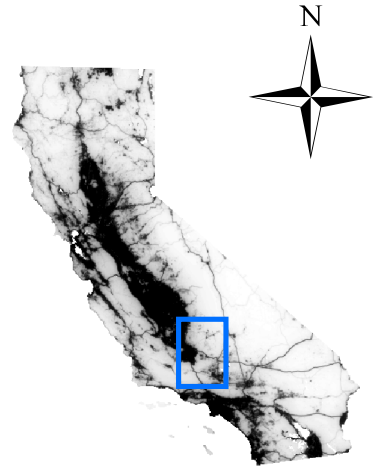
Western Pond Turtle *Emys marmorata*



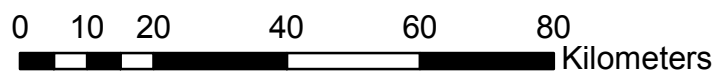
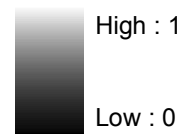
Yellow-blotched Ensatina *Ensatina eschscholtzii croceater*

- Modern occurrences (<20 years old)
- Historical occurrences (> 20 years old)

□ Species range



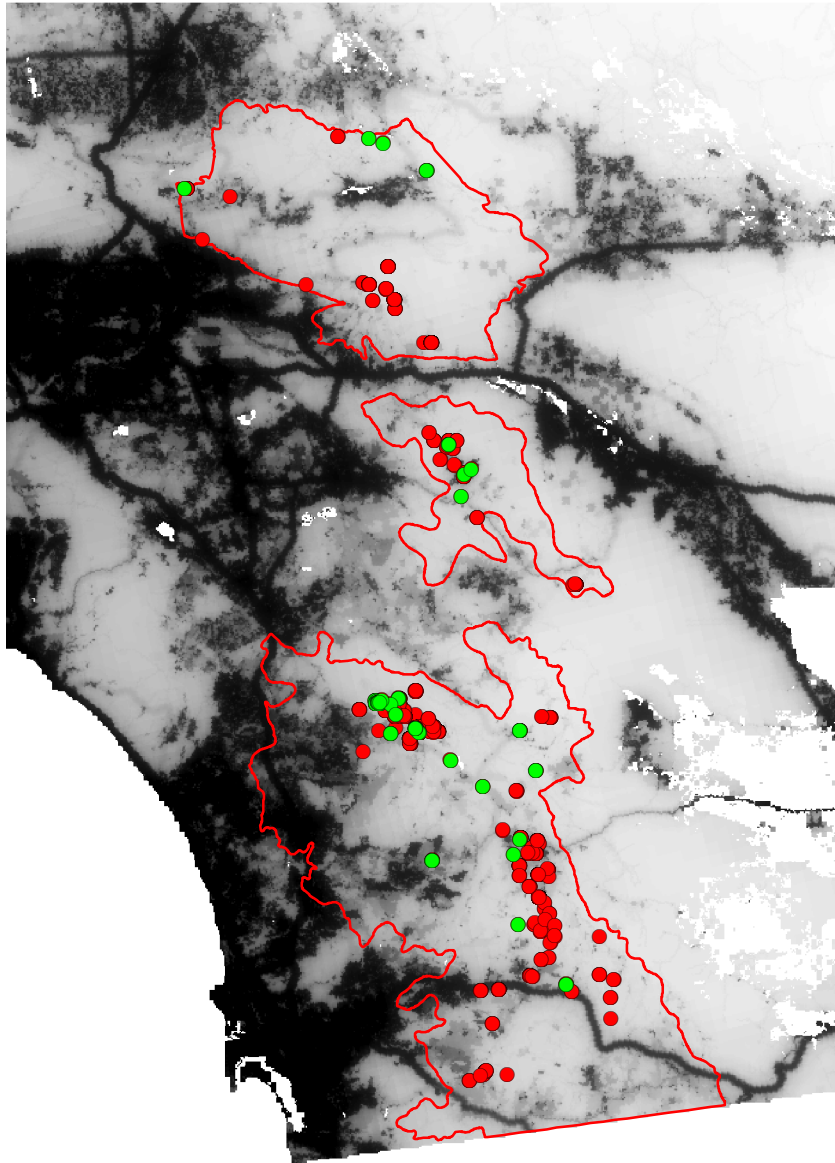
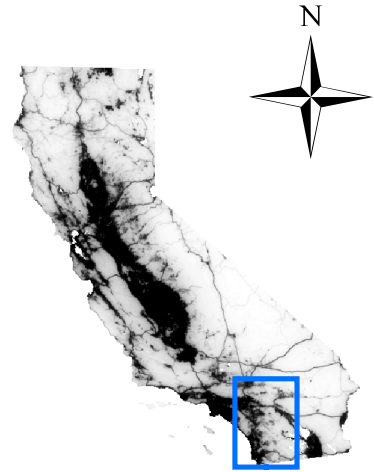
Natural Landscape Value



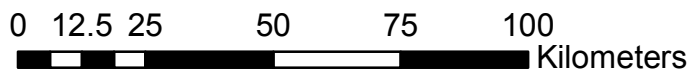
Large-blotched *Ensatina* *Ensatina eschscholtzii klauberi*

- Modern occurrences (<20 years old)
- Historical occurrences (> 20 years old)

□ Species range



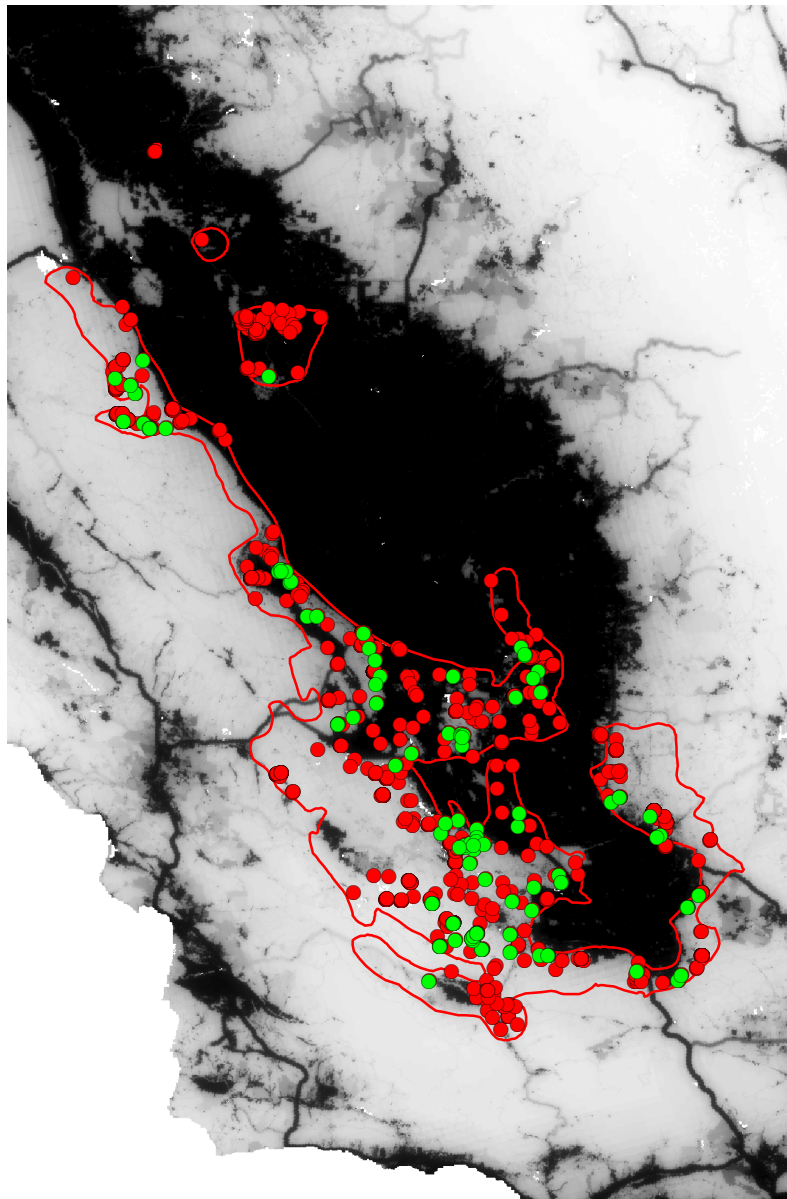
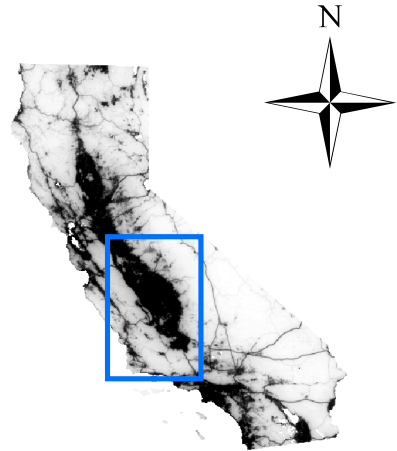
Natural Landscape Value



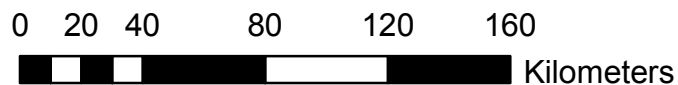
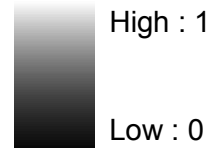
Blunt-nosed Leopard Lizard *Gambelia sila*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



Natural Landscape Value

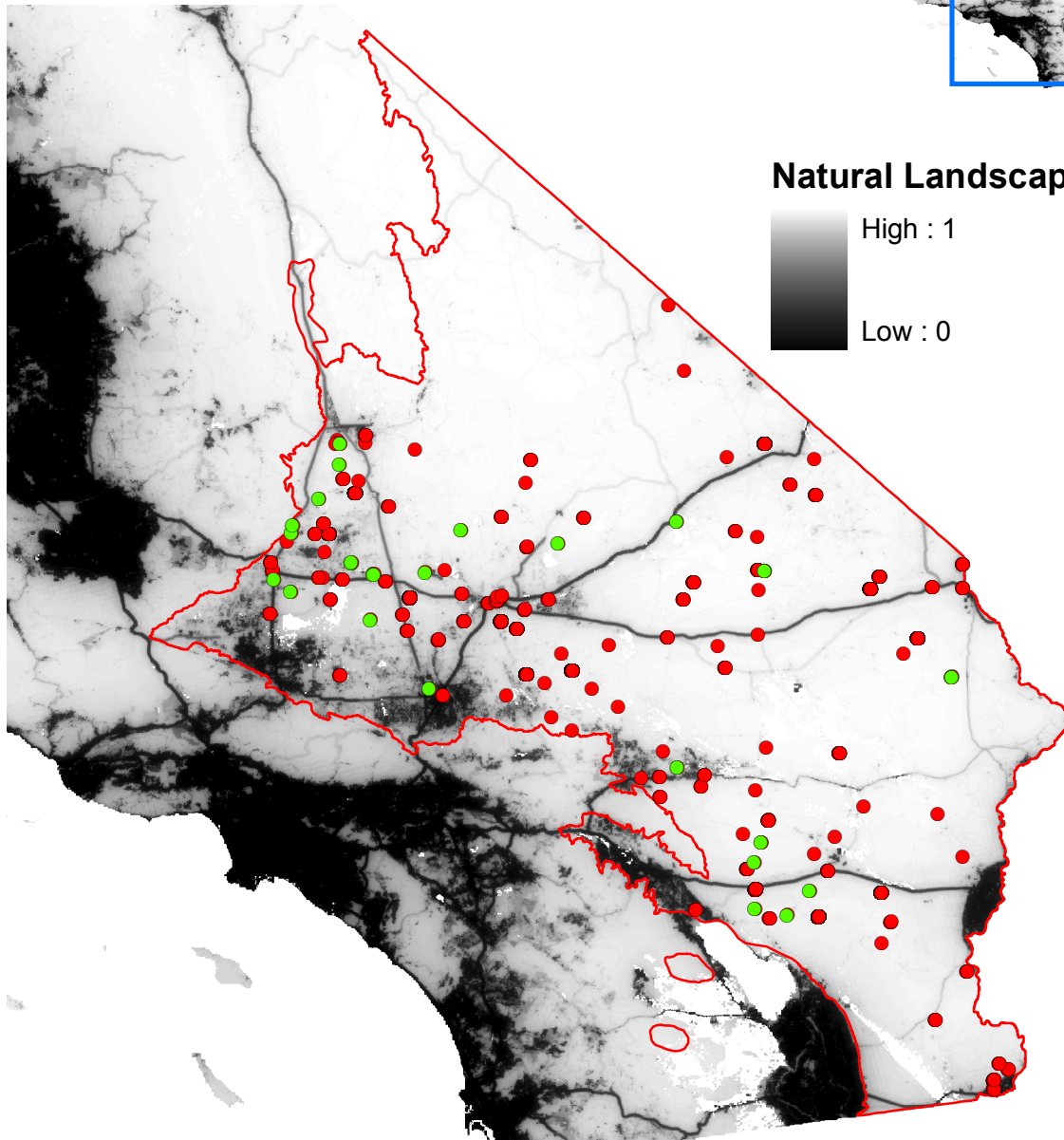


Desert Tortoise *Gopherus agassizii*



- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

Species range

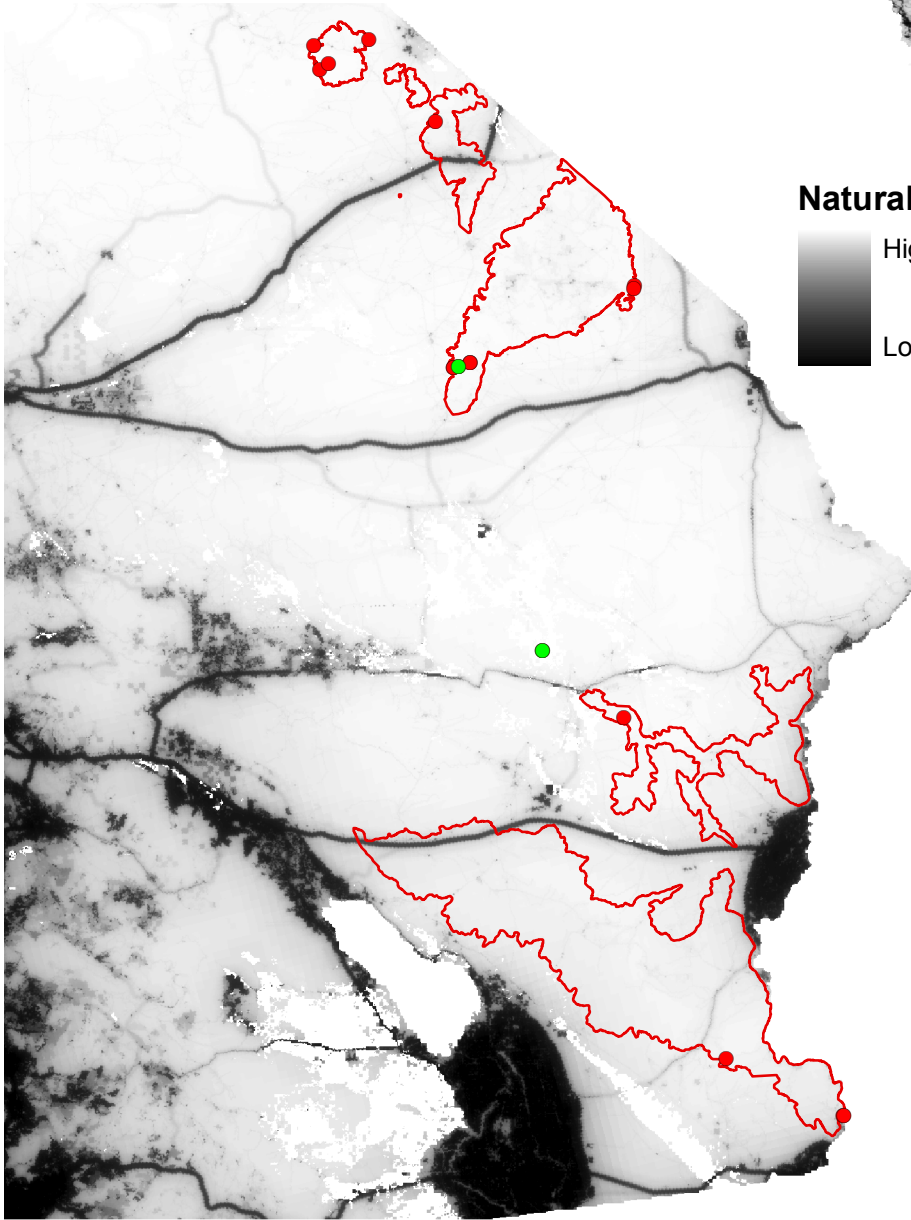
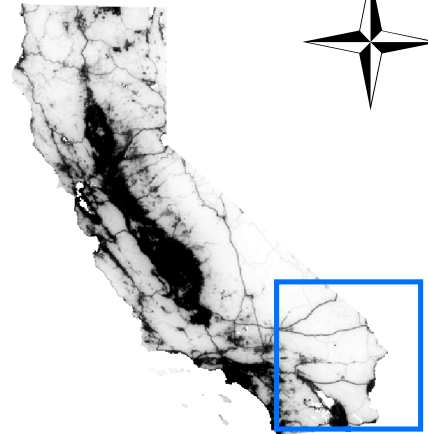


0 30 60 120 180 240
Kilometers

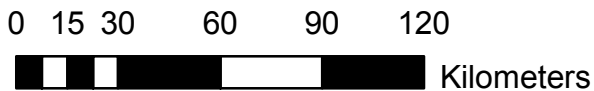
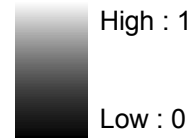
Banded Gila Monster *Heloderma suspectum cinctum*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



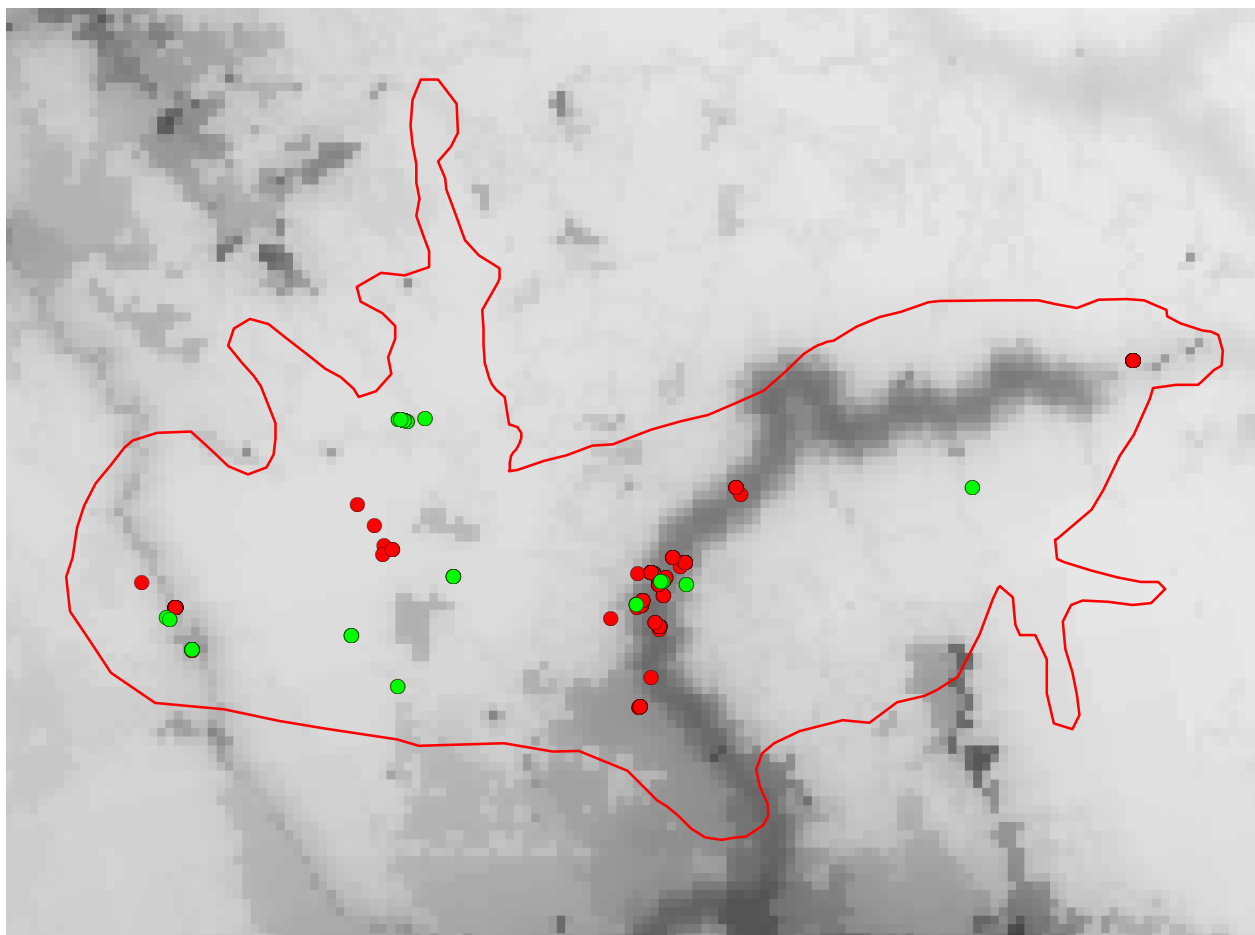
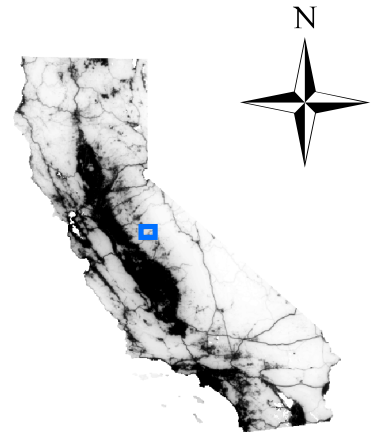
Natural Landscape Value



Limestone Salamander *Hydromantes brunus*

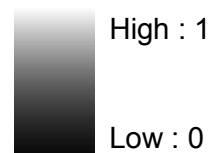
- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range

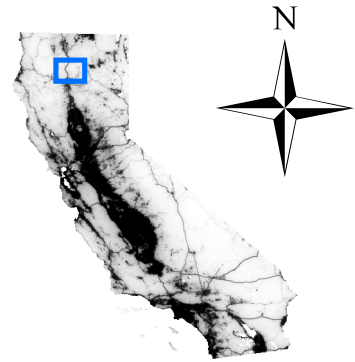


0 2 4 8 12 16 Kilometers

Natural Landscape Value

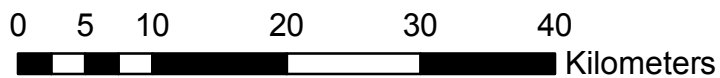
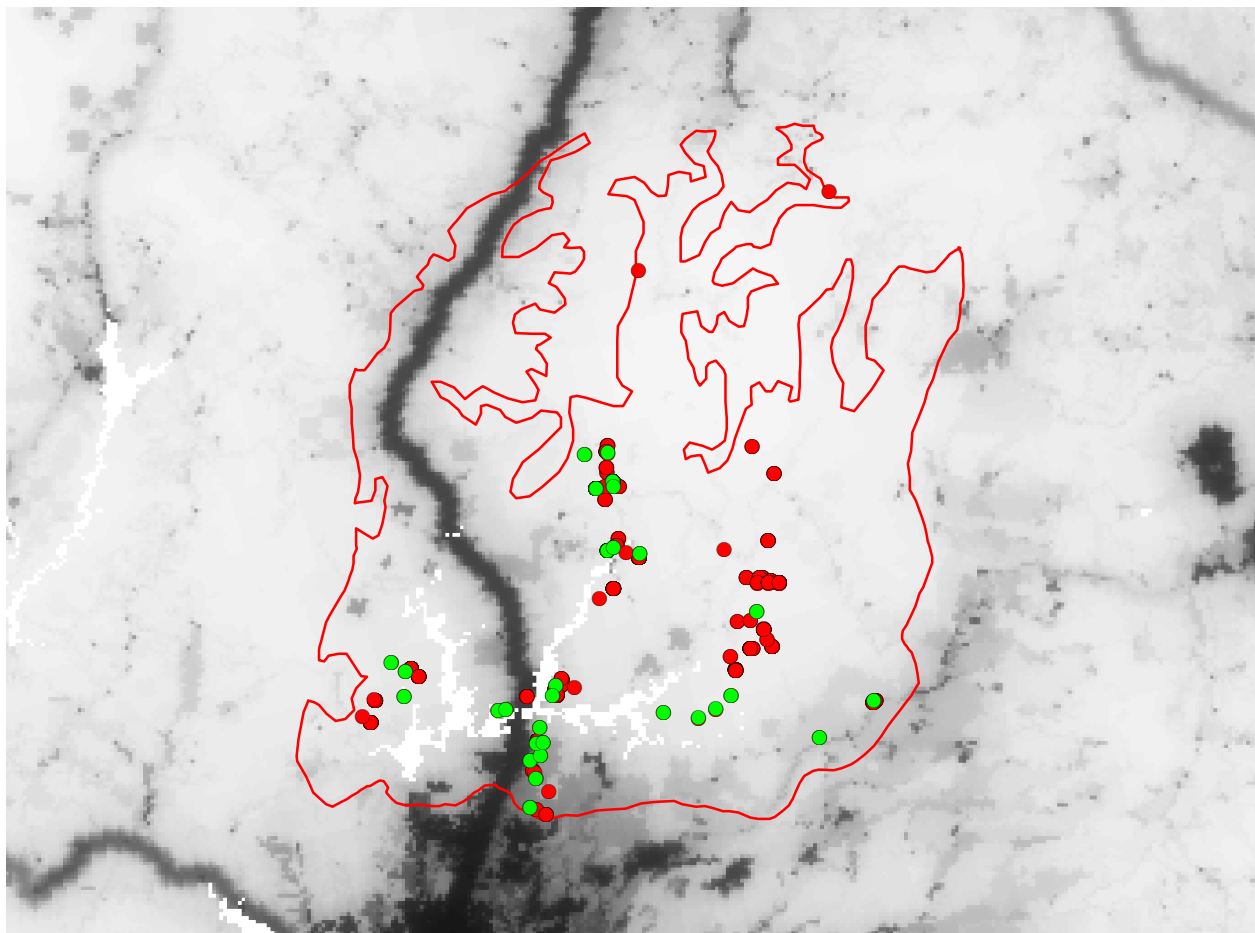


Shasta Salamander *Hydromantes shastae*

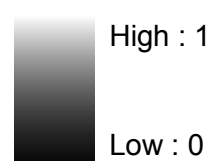


- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

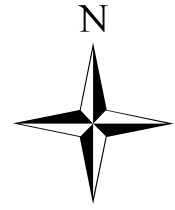
□ Species range



Natural Landscape Value

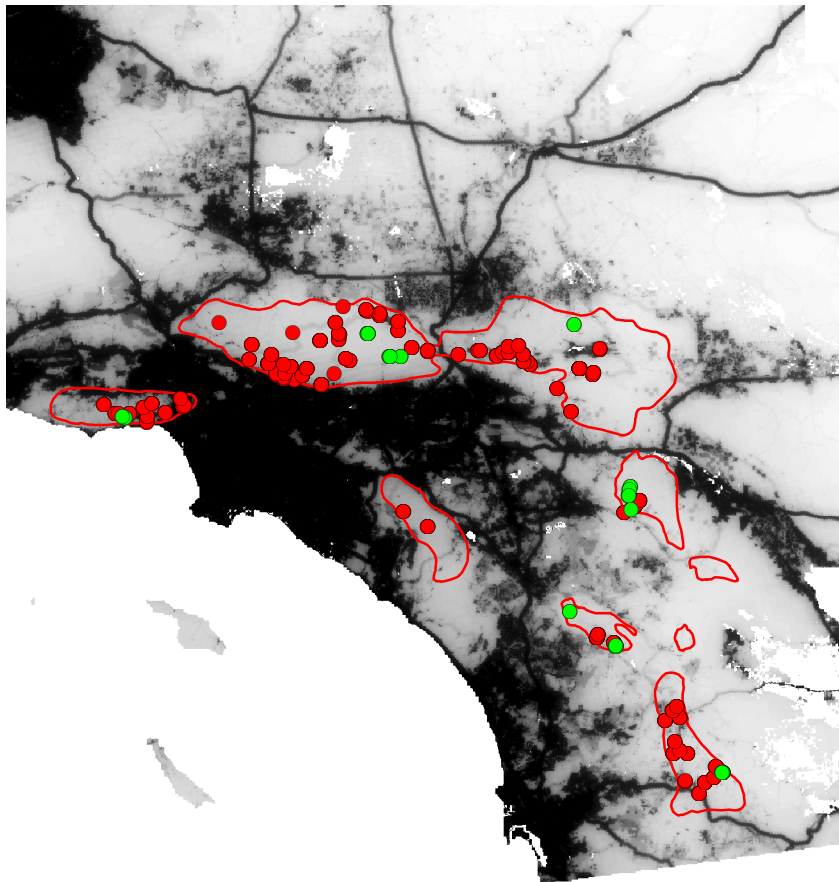
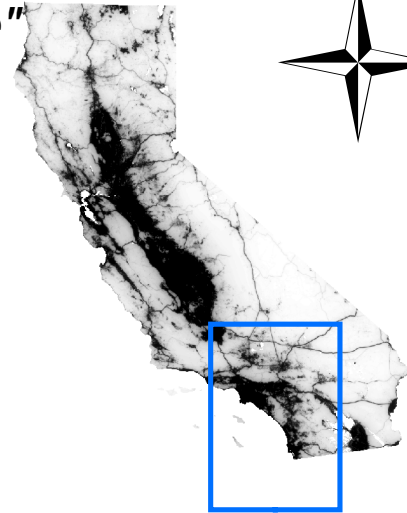


California Mountain Kingsnake *Lampropeltis zonata* "Southern Clade"

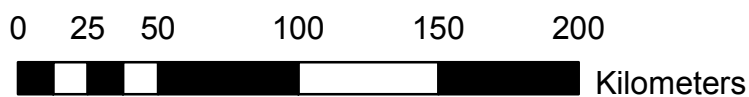
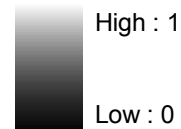


- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



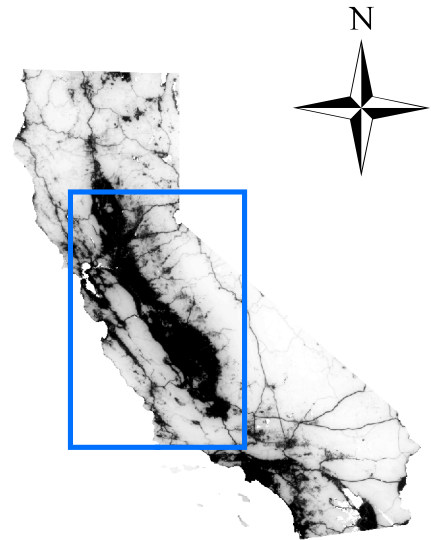
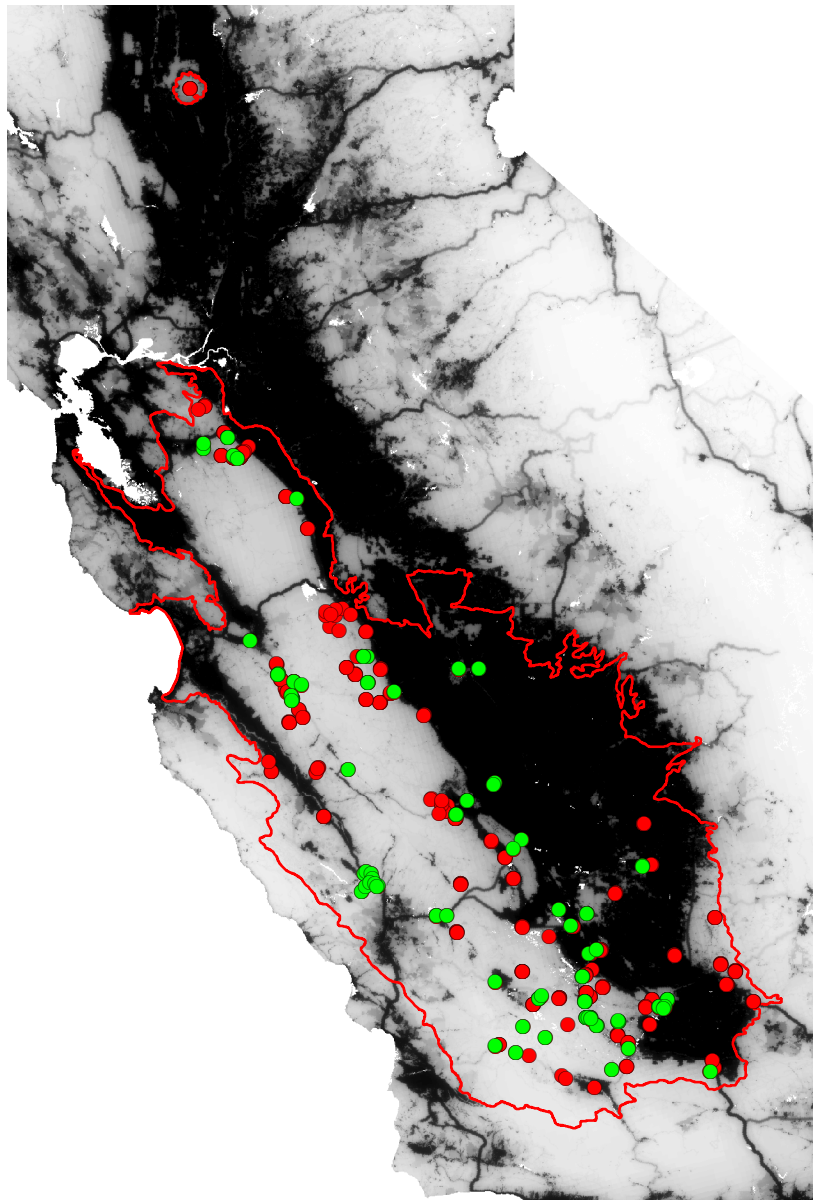
Natural Landscape Value
Value



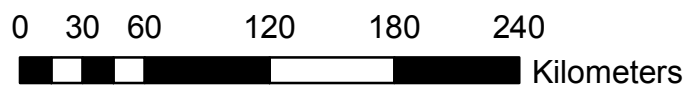
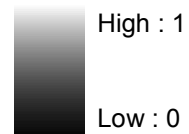
San Joaquin Coachwhip *Masticophis flagellum ruddocki*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range

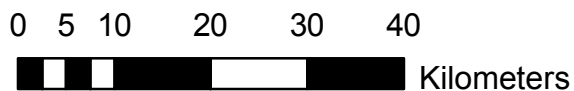
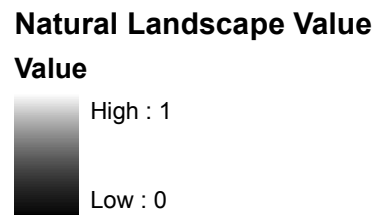
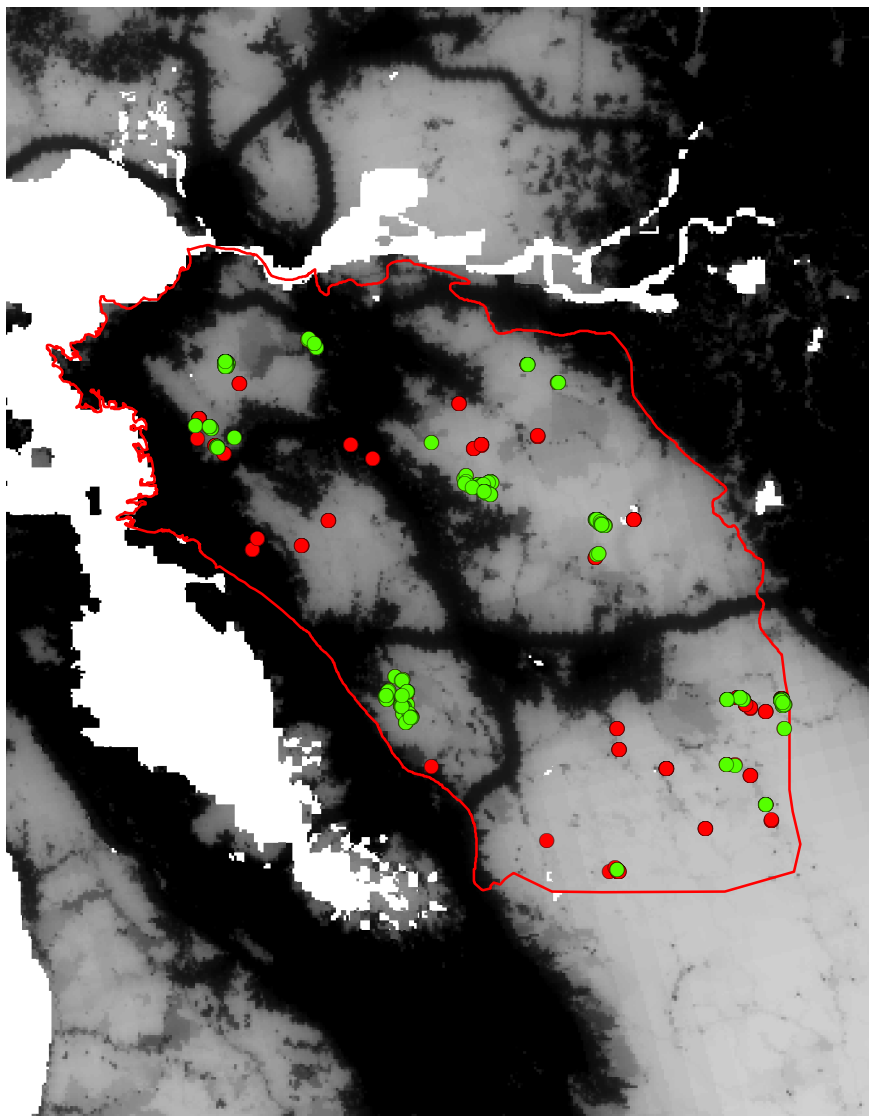
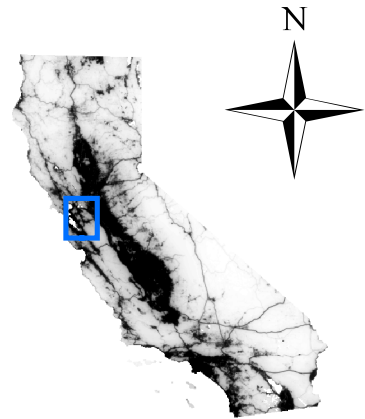


Natural Landscape Value
Value



Alameda Striped Racer *Masticophis lateralis euryxanthus*

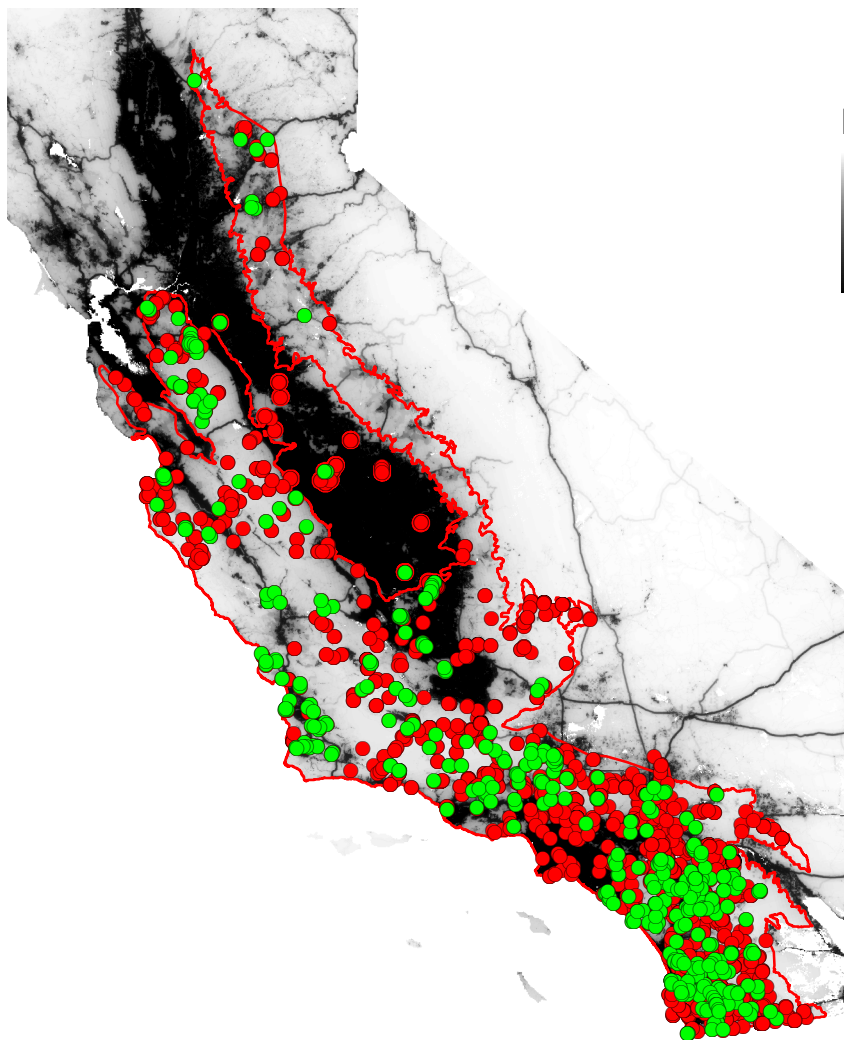
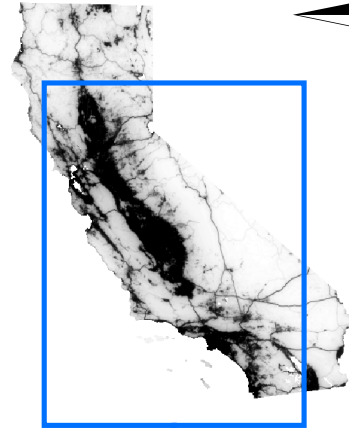
- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



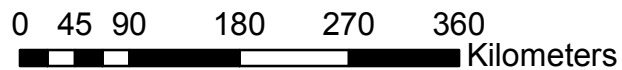
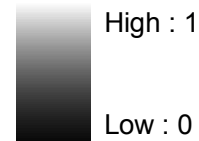
Coast Horned Lizard *Phrynosoma blainvilli*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



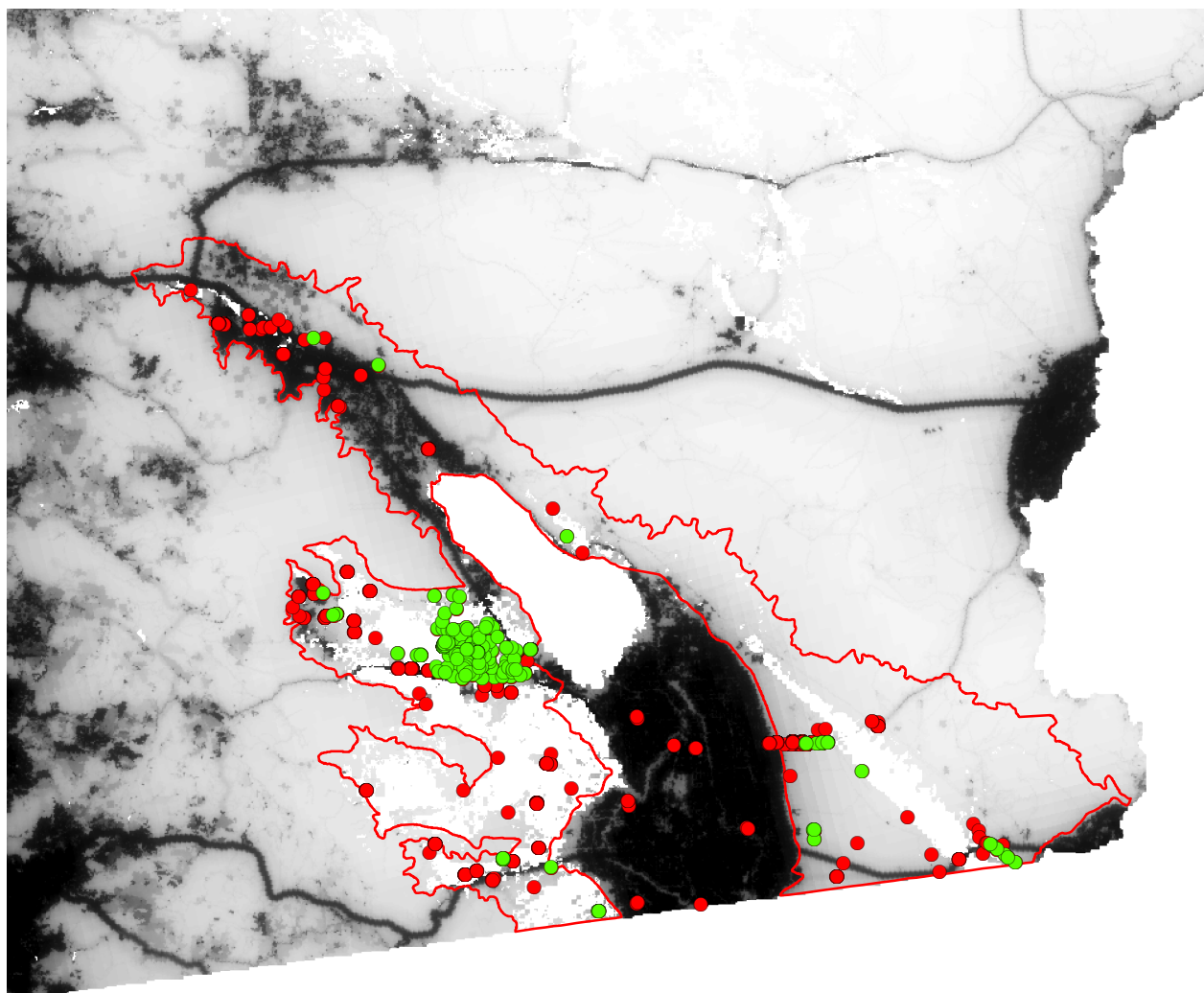
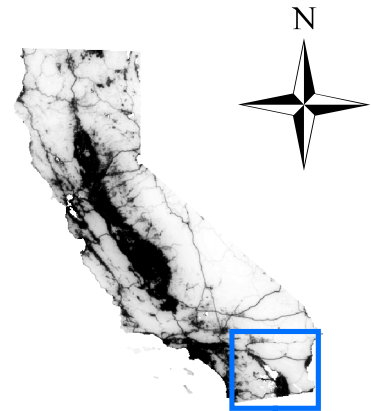
Natural Landscape Value



Flat-tailed Horned Lizard *Phrynosoma mcalli*

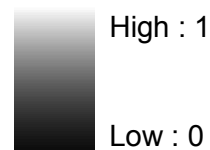
- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



0 10 20 40 60 80 Kilometers

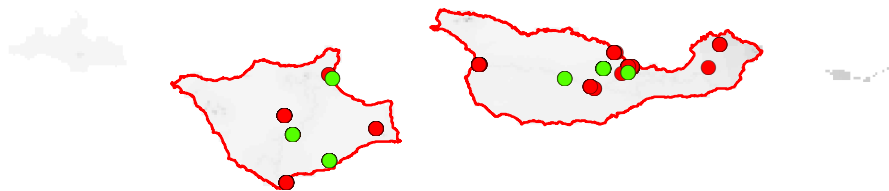
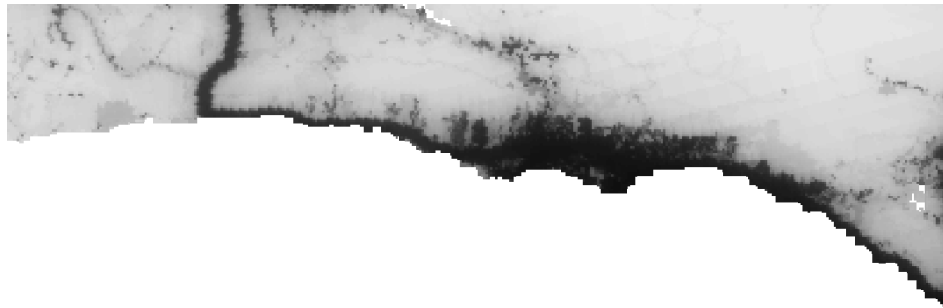
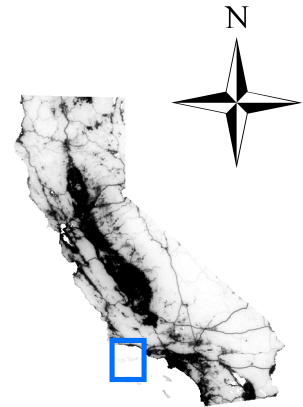
Natural Landscape Value



Santa Cruz Island Gopher Snake *Pituophis catenifer pumilis*

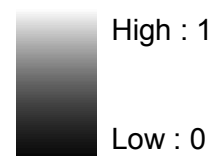
- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

Species range



0 5 10 20 30 40
Kilometers

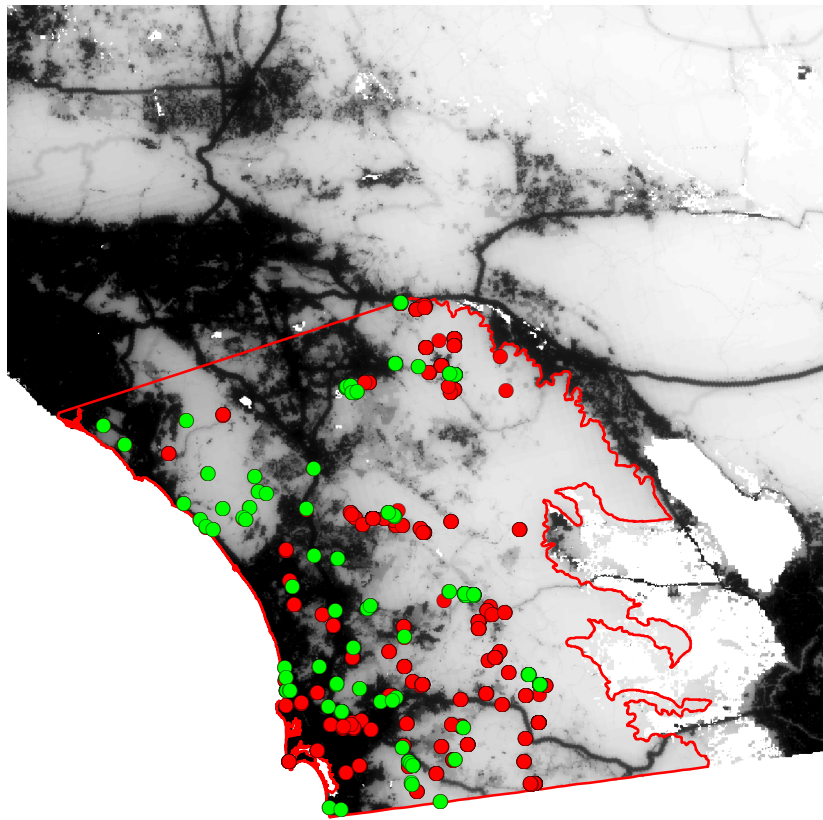
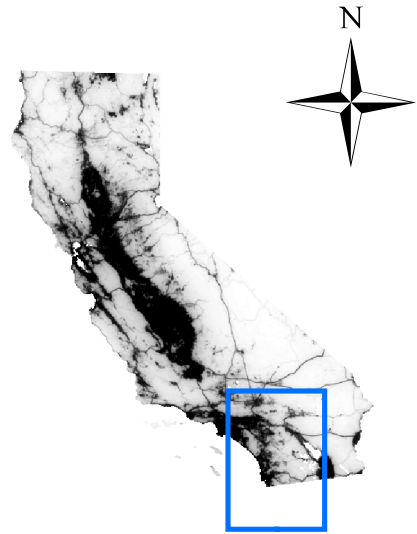
Natural Landscape Value
Value



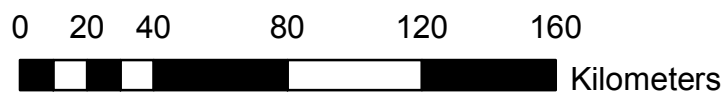
Coronado Skink *Plestiodon skiltonianus interparietalis*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

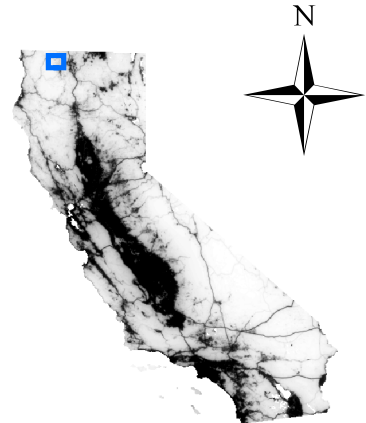
Species range



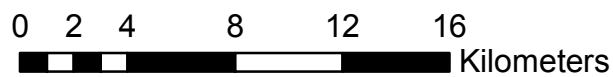
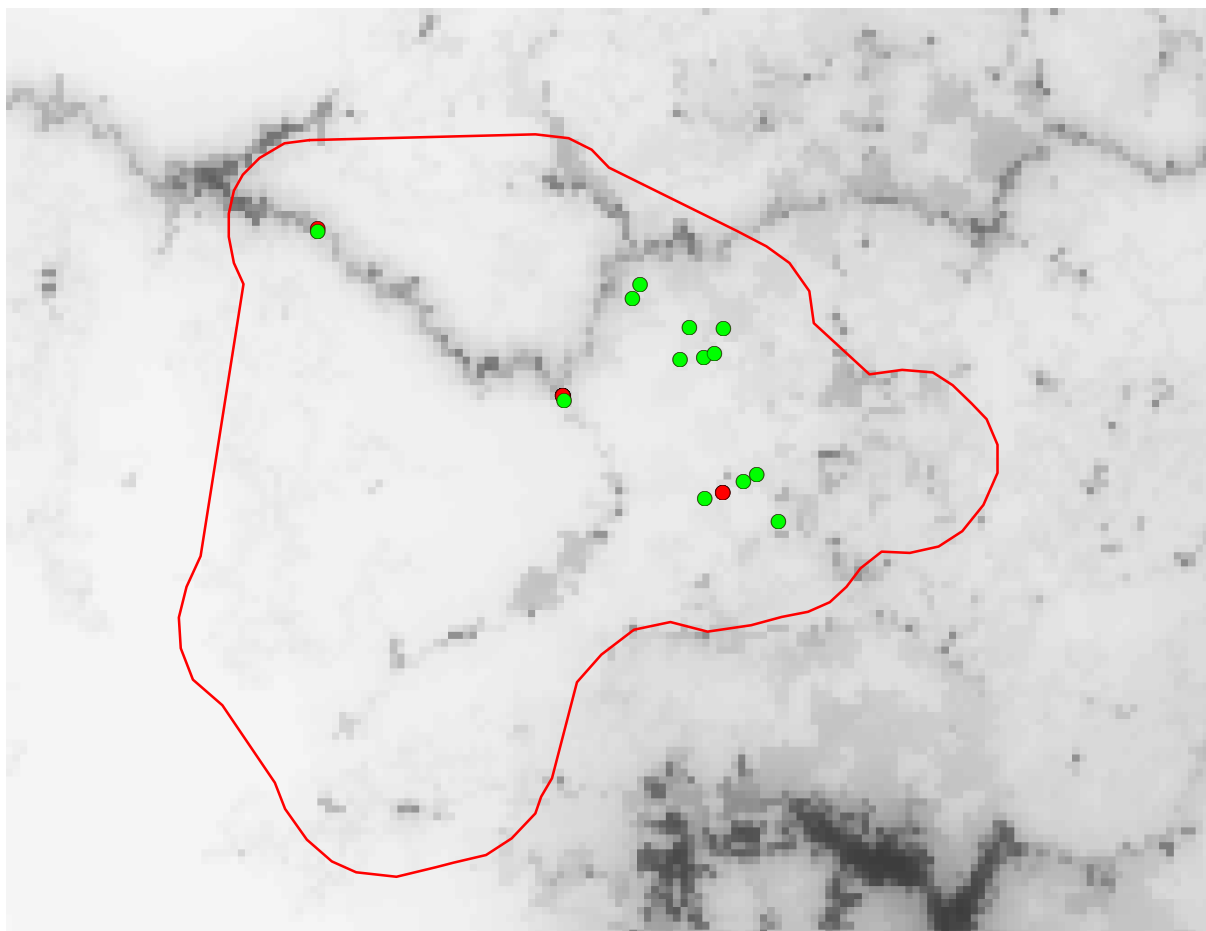
Natural Landscape Value



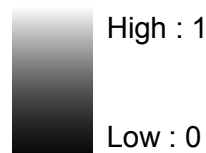
Scott Bar Salamander *Plethodon asupak*



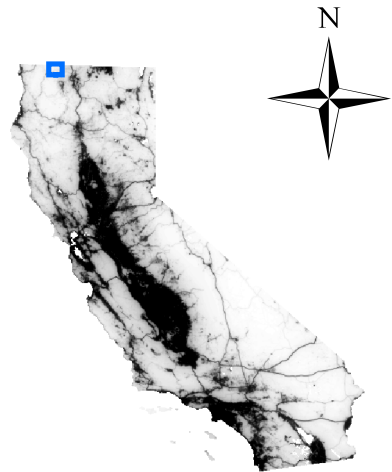
- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



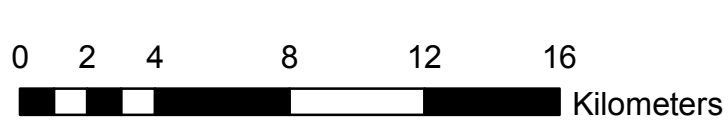
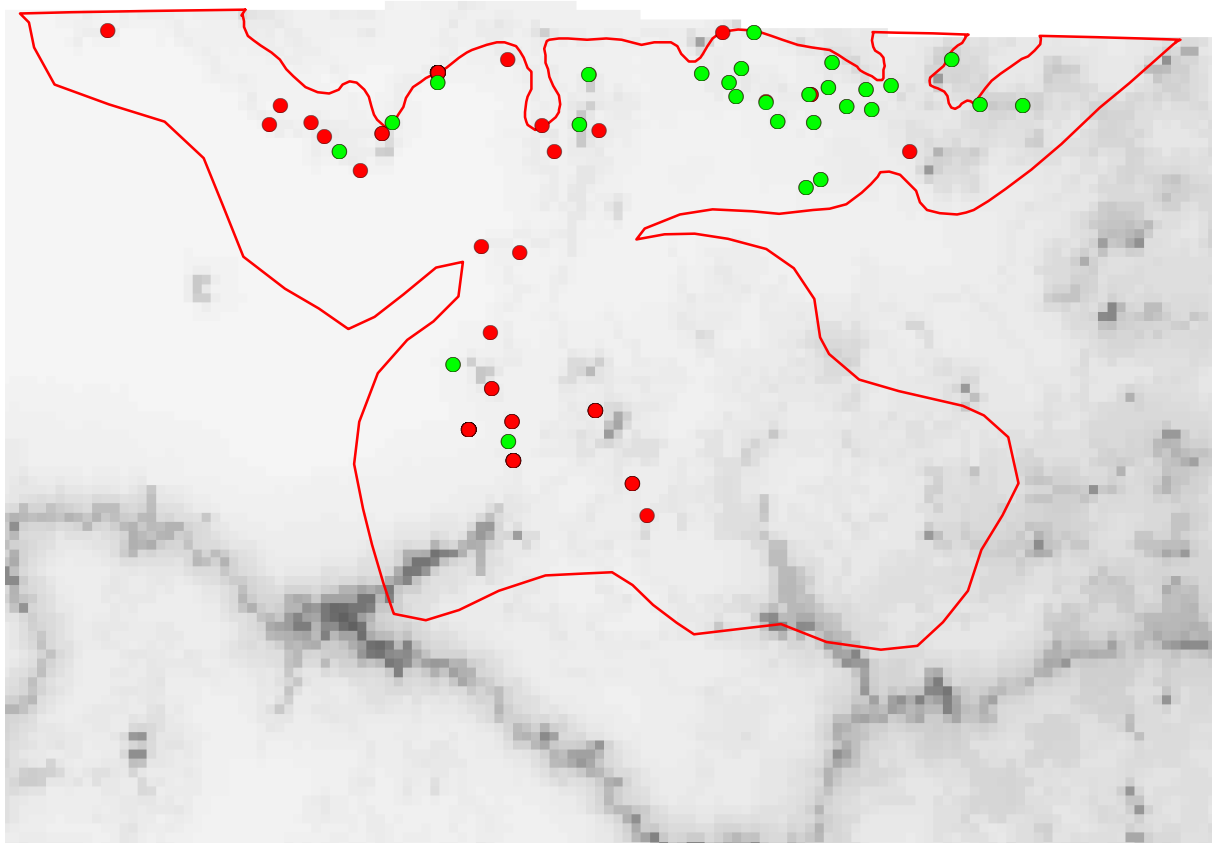
Natural Landscape Value



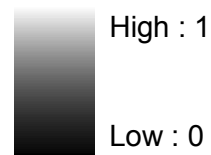
Siskiyou Mountains Salamander *Plethodon stormi*



- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



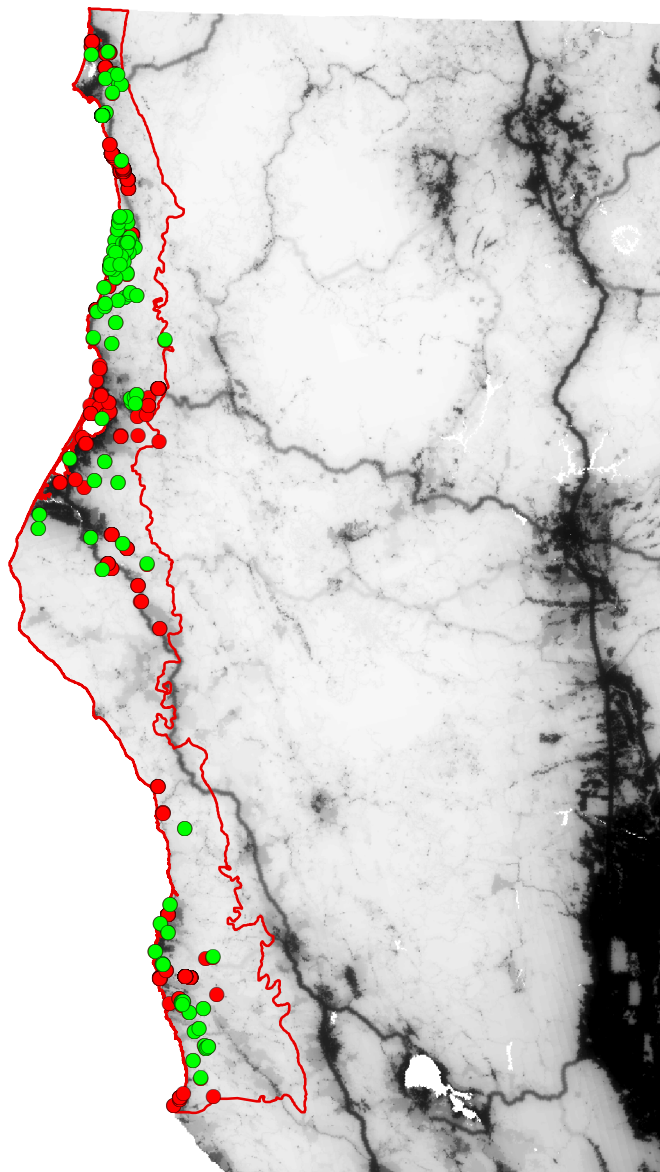
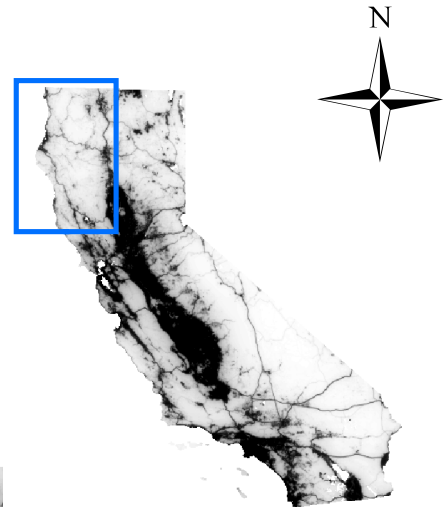
Natural Landscape Value



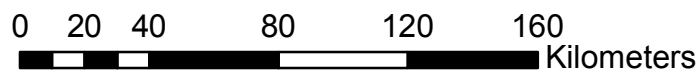
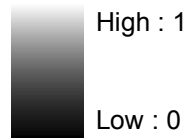
Northern Red-legged Frog *Rana aurora*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

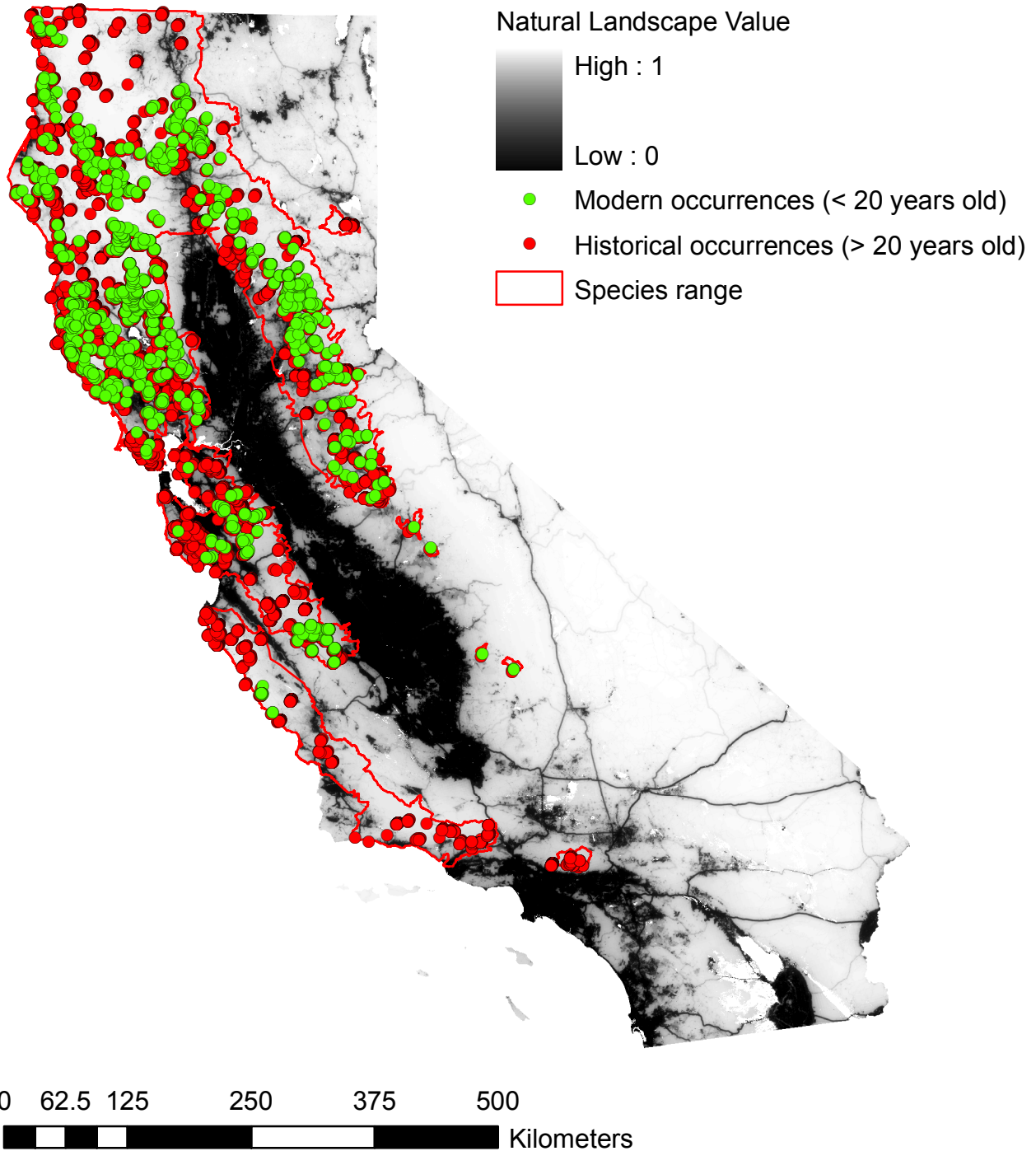
□ Species range



Natural Landscape Value



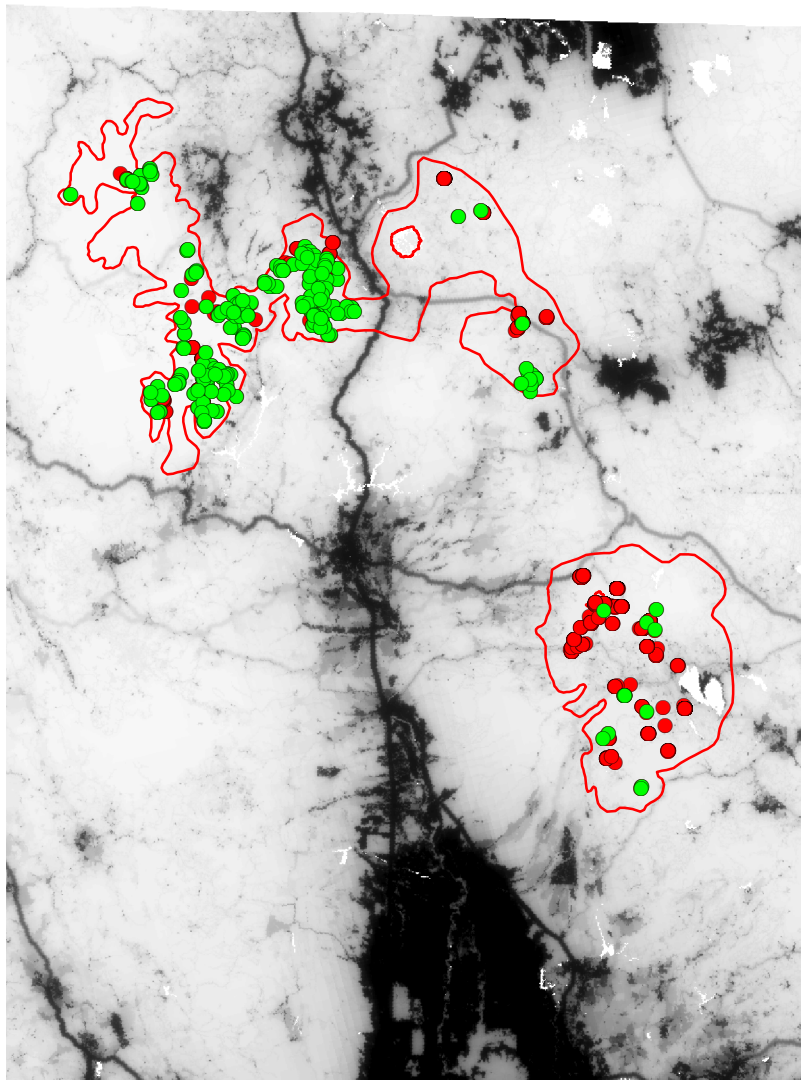
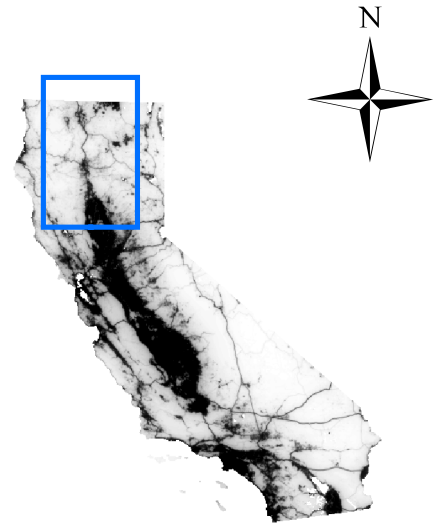
Foothill Yellow-legged Frog *Rana boylei*



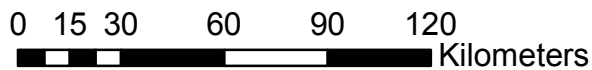
Cascades Frog *Rana cascadae*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

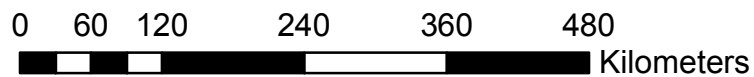
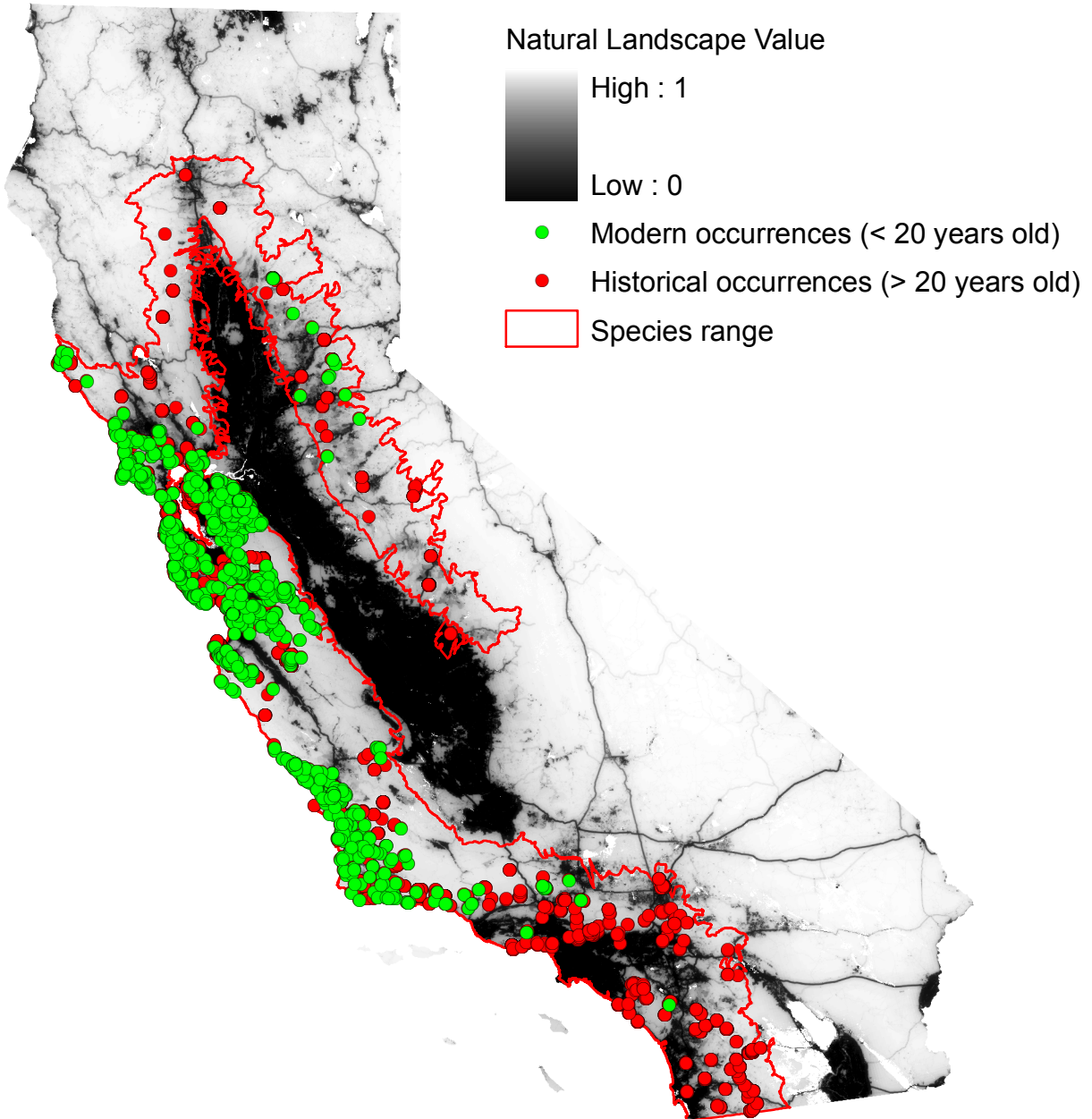
□ Species range



Natural Landscape Value



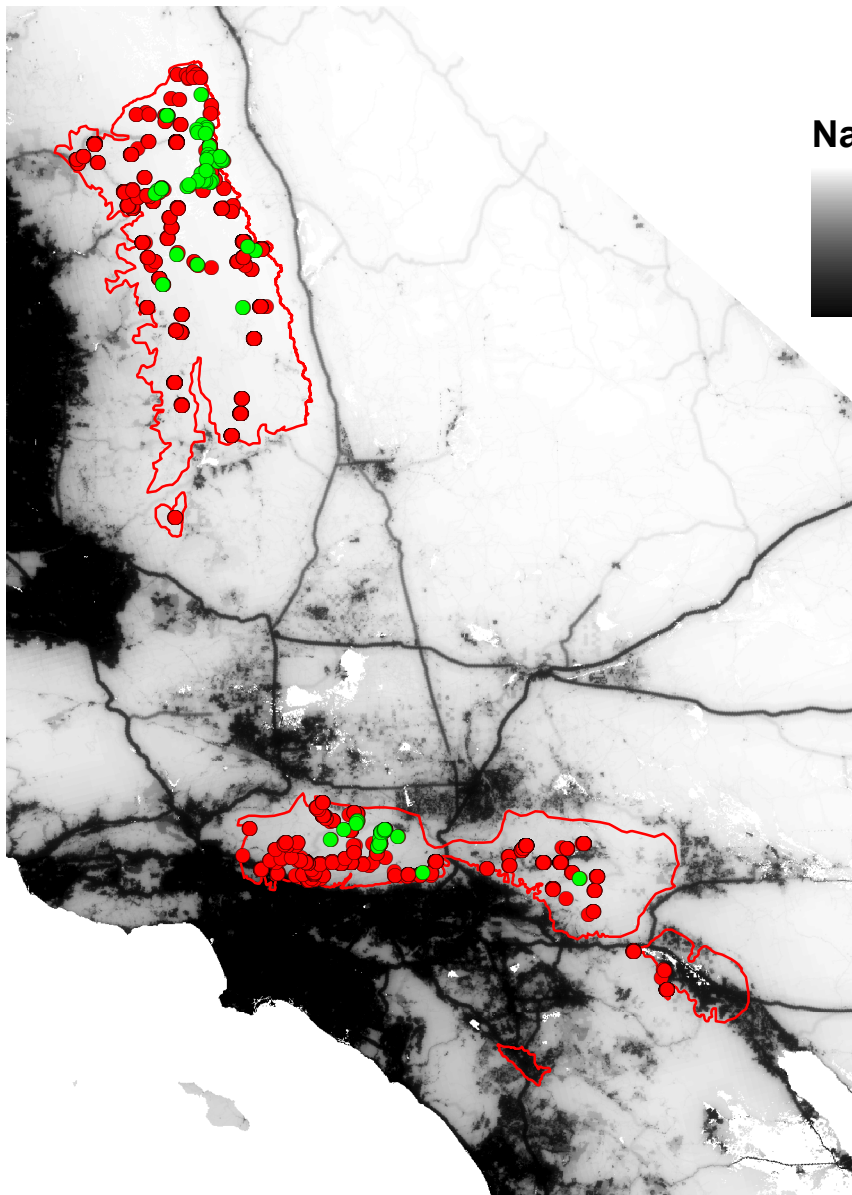
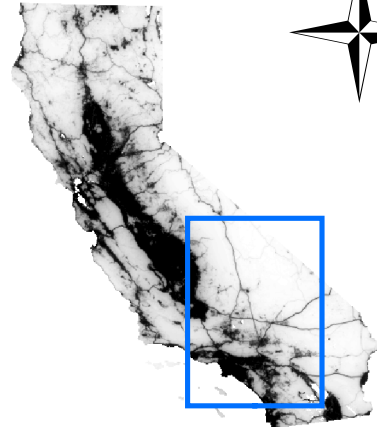
California Red-legged Frog *Rana draytonii*



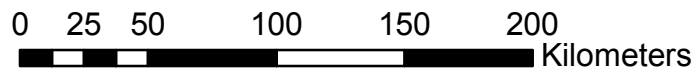
Southern Mountain Yellow-legged Frog *Rana muscosa*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

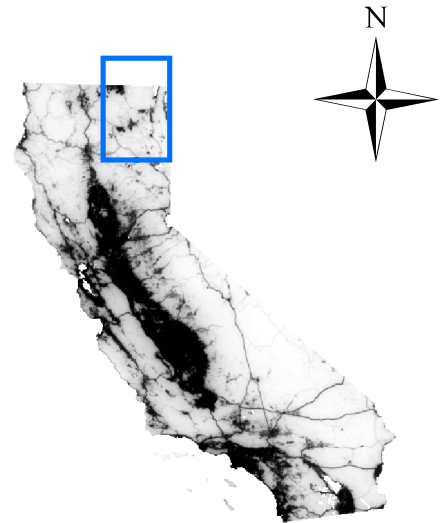
□ Species range



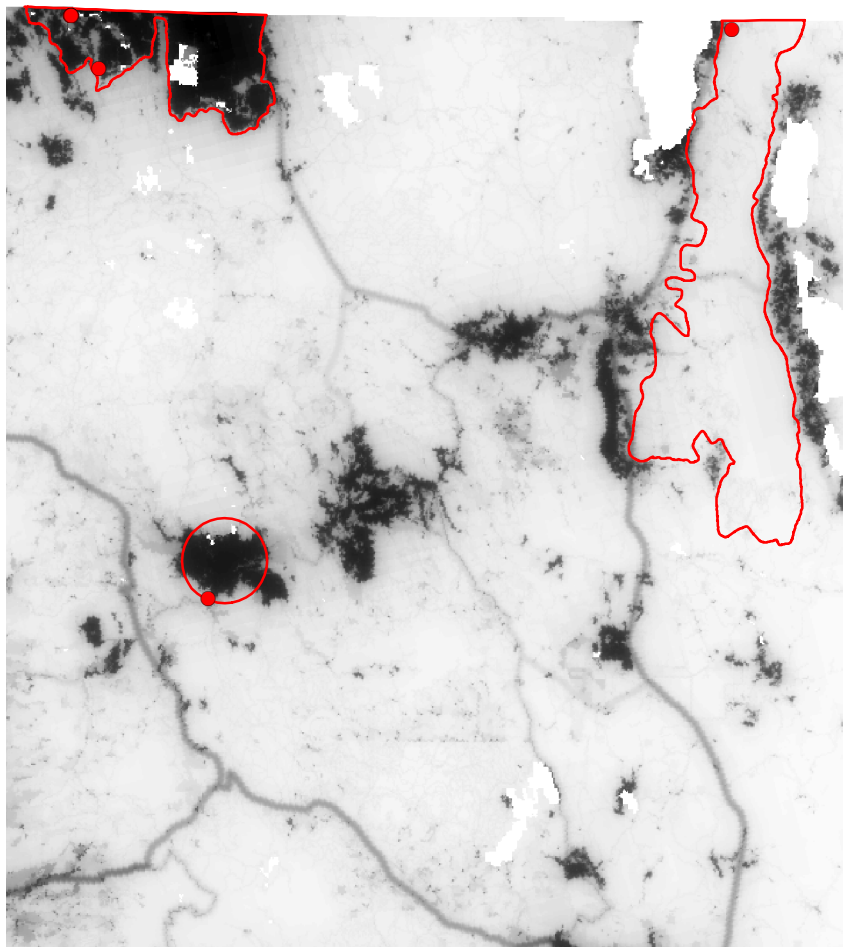
Natural Landscape Value



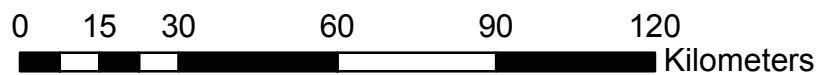
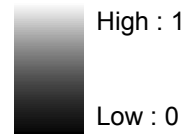
Oregon Spotted Frog *Rana pretiosa*



- Historical occurrences (> 20 years old)
- Species range



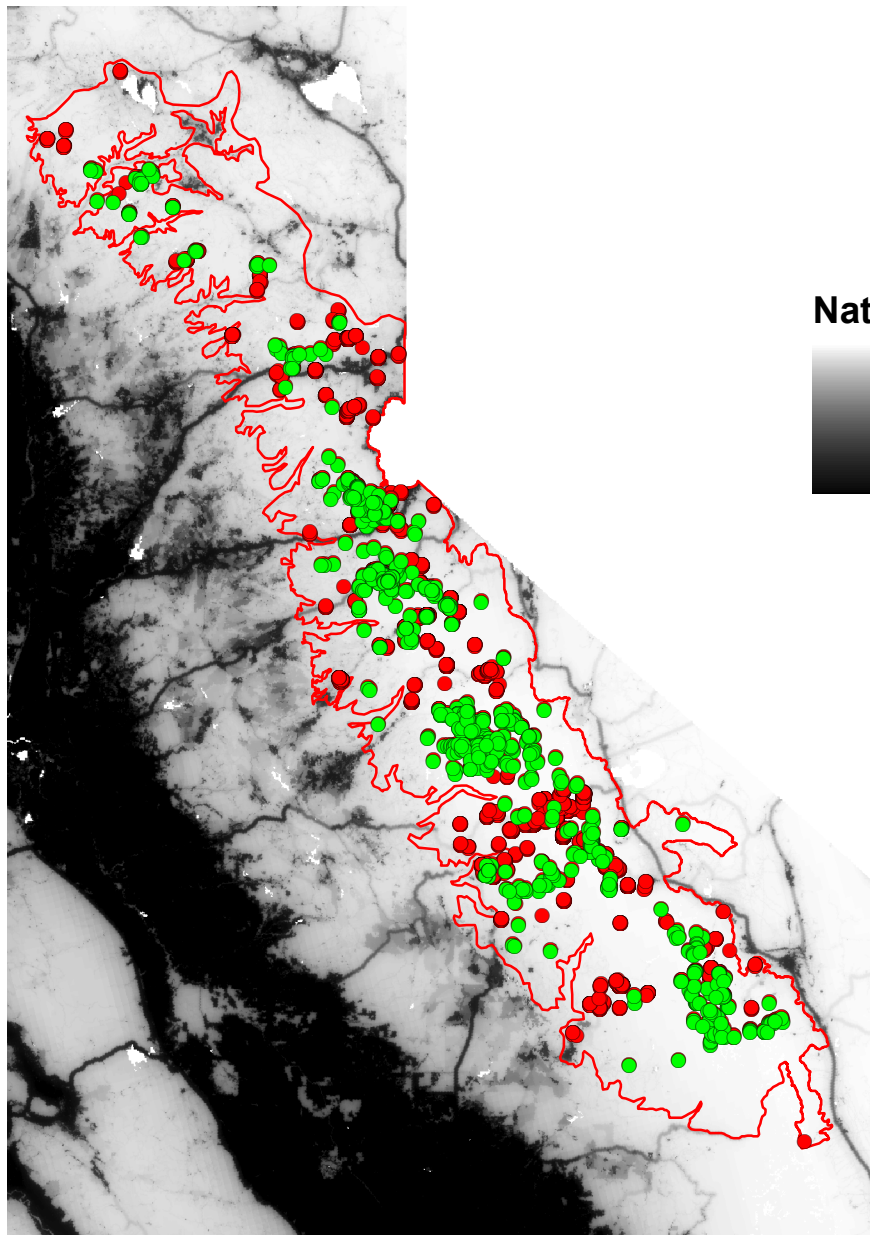
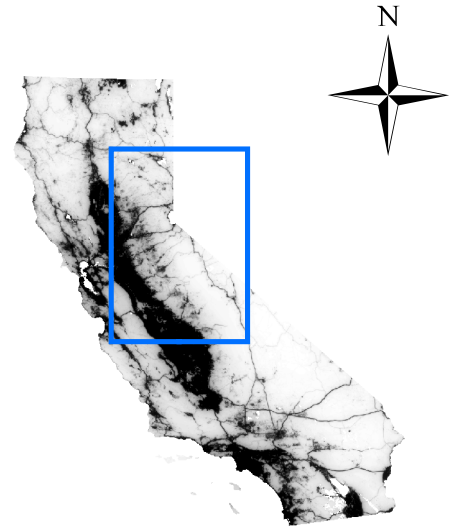
Natural Landscape Value



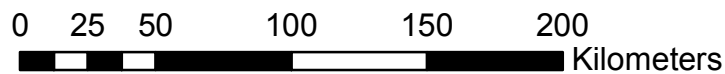
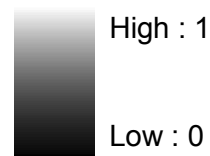
Sierra Nevada Yellow-legged Frog *Rana sierrae*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



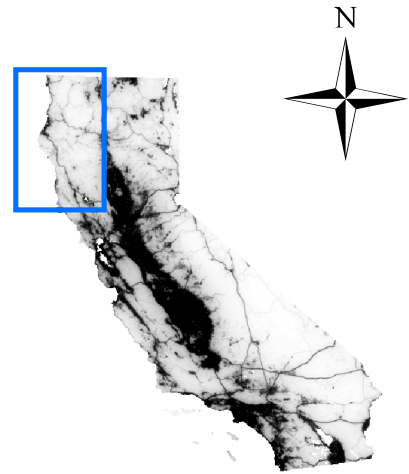
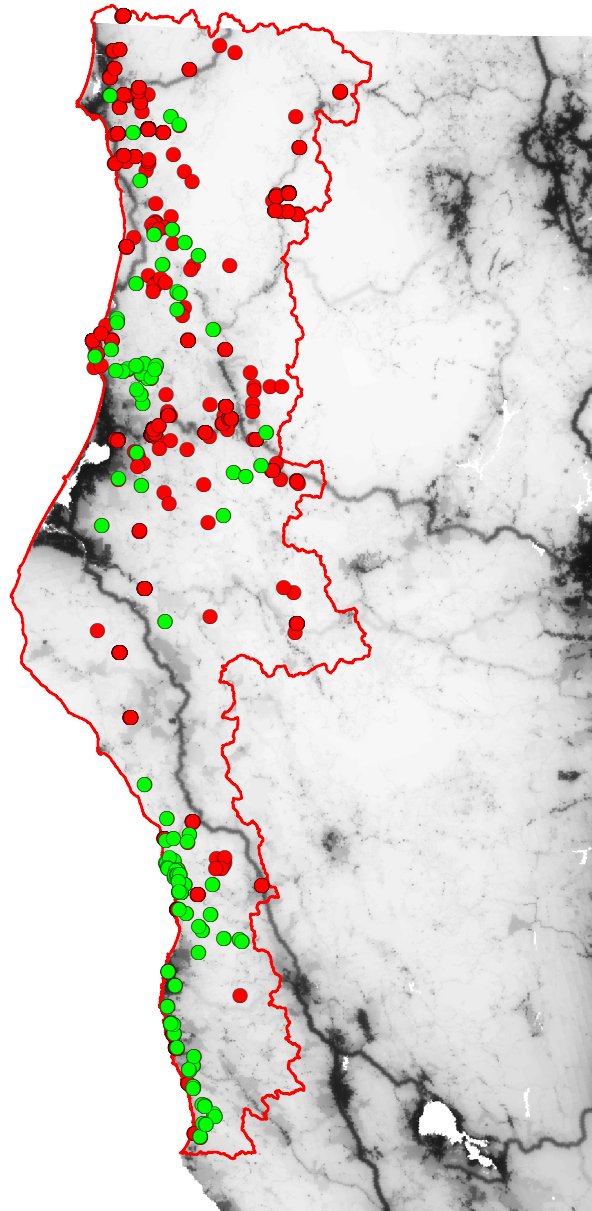
Natural Landscape Value



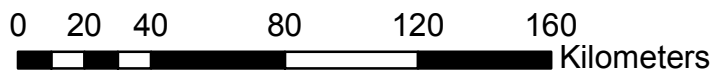
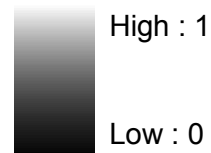
Southern Torrent Salamander *Rhyacotriton variegatus*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



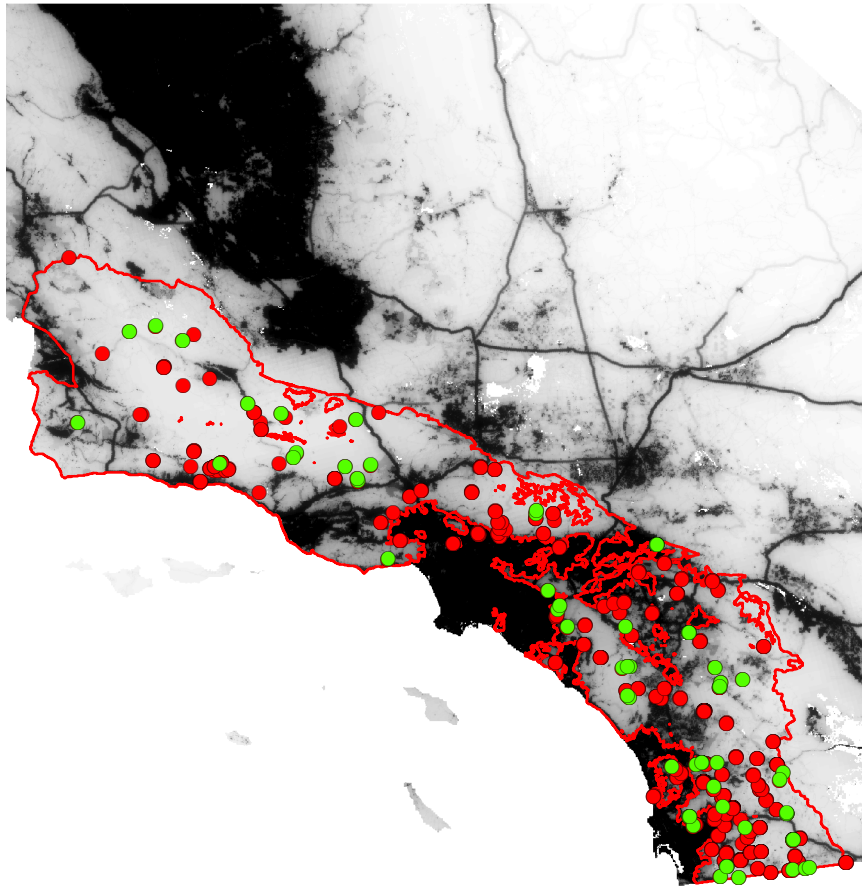
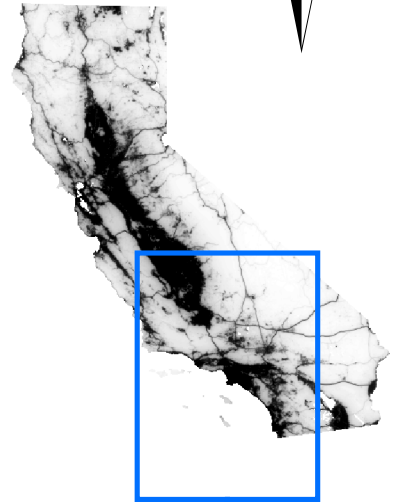
Natural Landscape Value



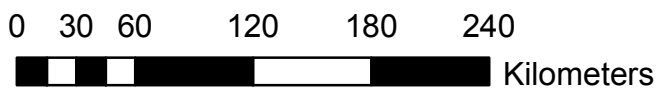
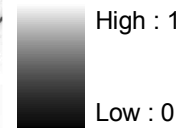
Coast Patch-Nosed Snake *Salvadora hexalepis virgulata*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range



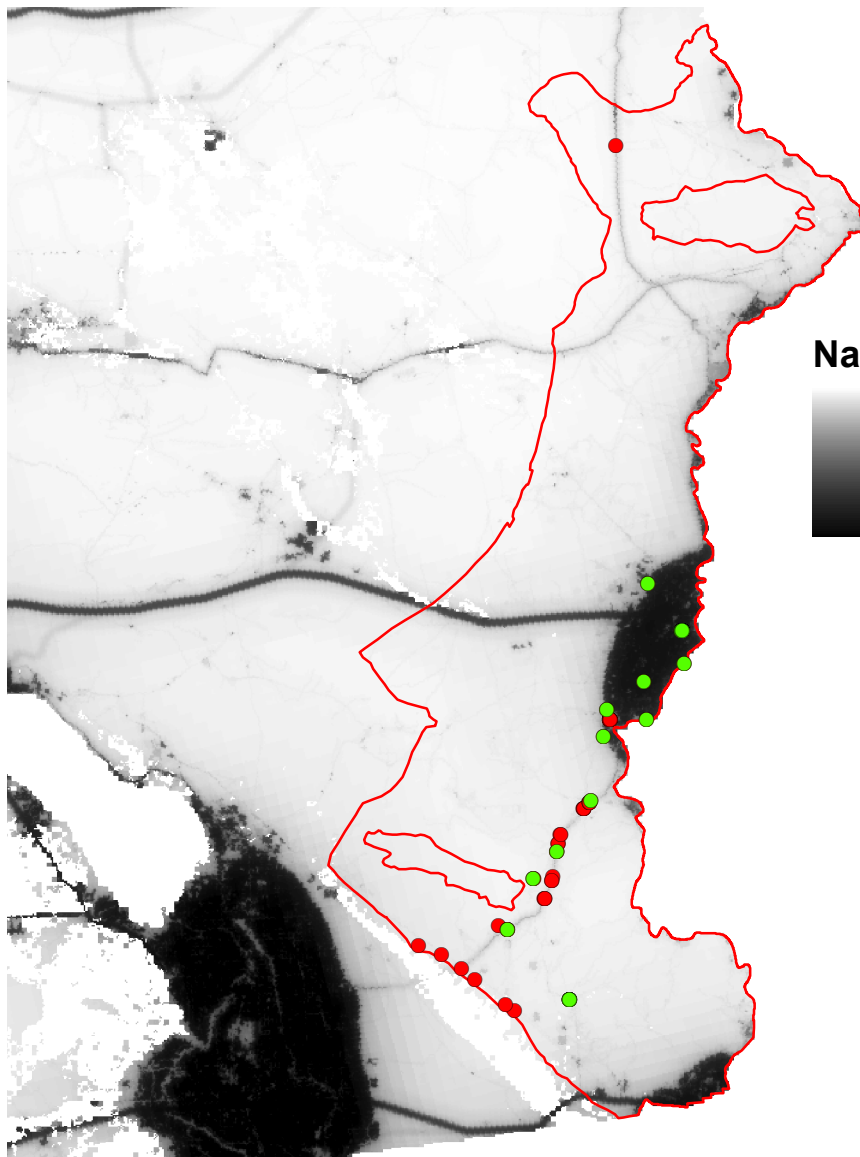
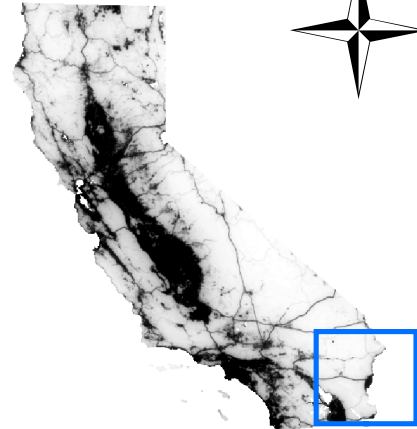
Natural Landscape Value
Value



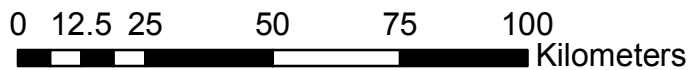
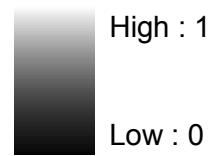
Couch's Spadefoot *Scaphiopus couchii*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

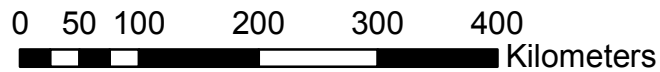
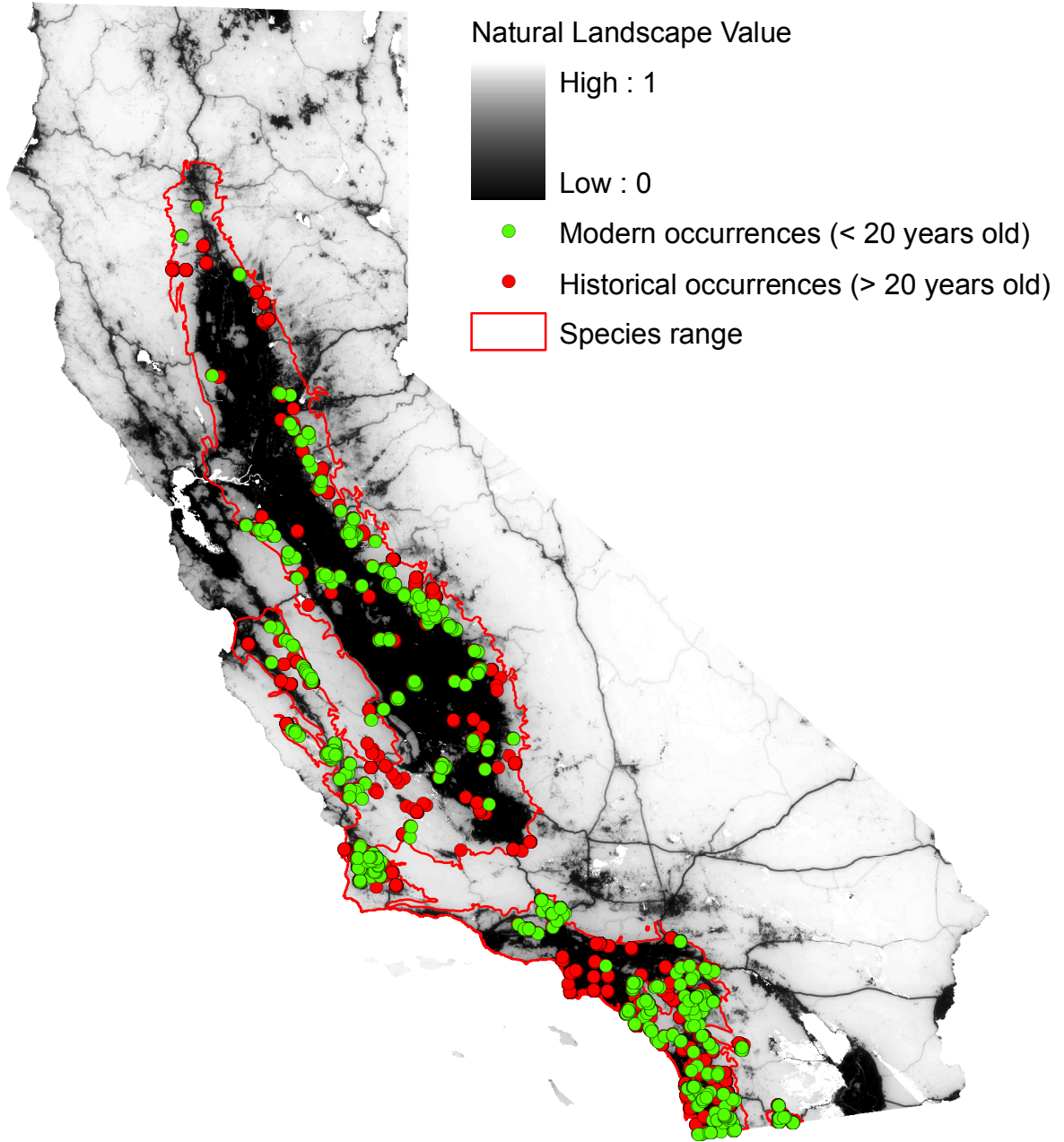
□ Species range



Natural Landscape Value



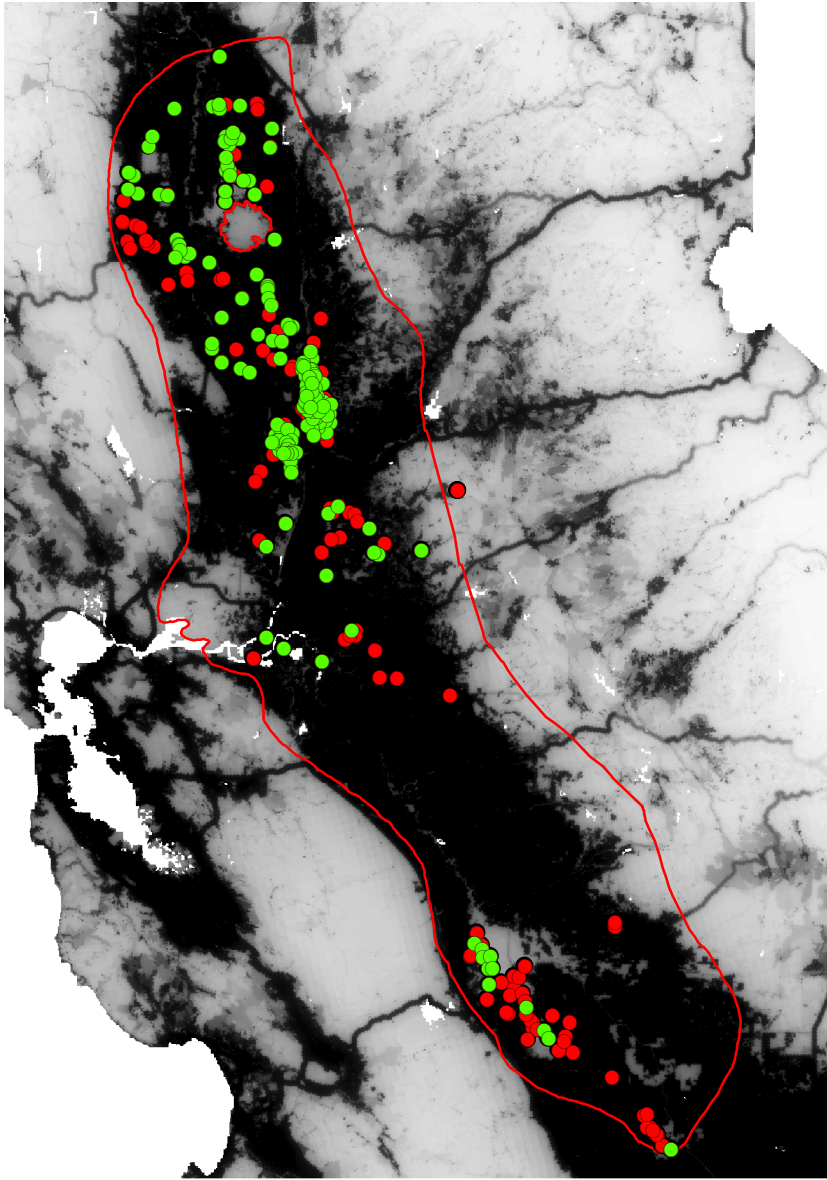
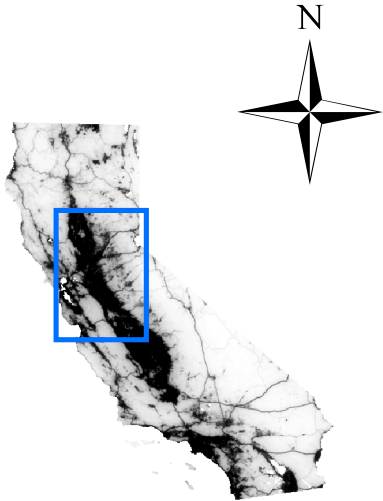
Western Spadefoot *Spea hammondi*



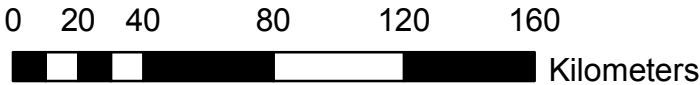
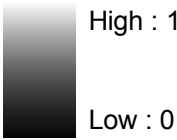
Giant Gartersnake *Thamnophis gigas*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range

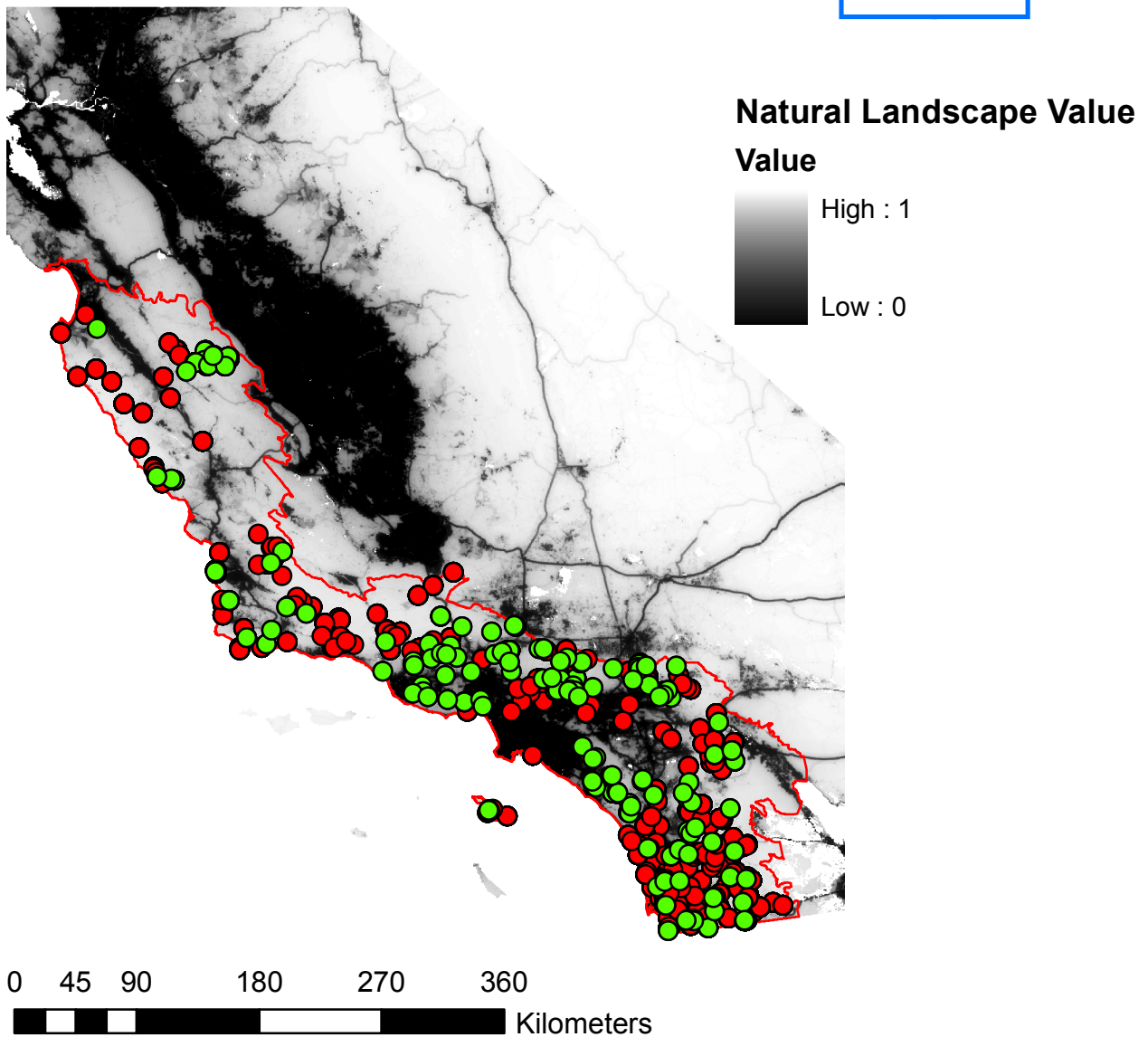
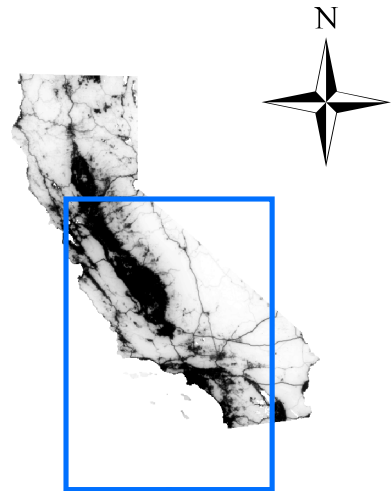


Natural Landscape Value
Value



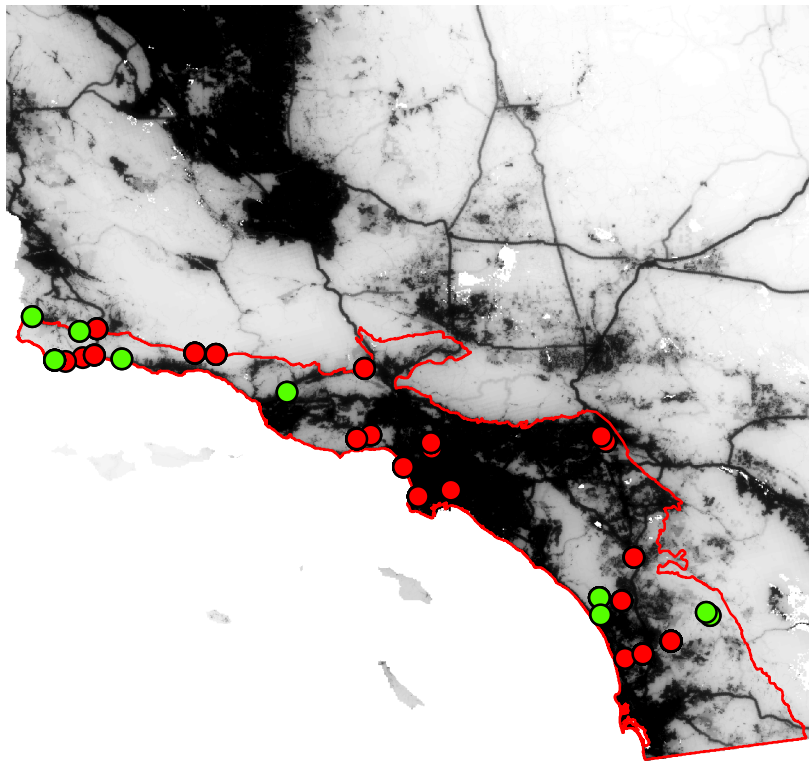
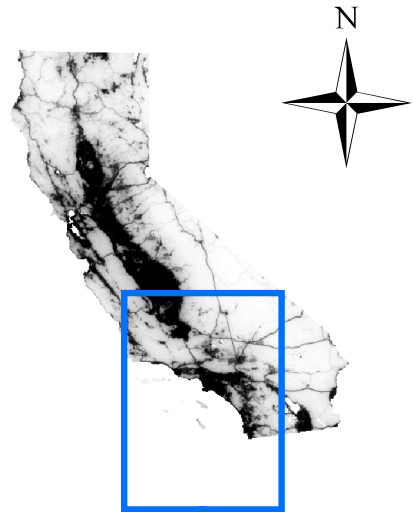
Two-Striped Gartersnake *Thamnophis hammondi*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range

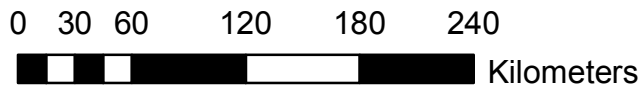
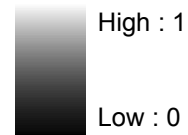


South Coast Gartersnake *Thamnophis sirtalis* sp.

- Modern occurrences (< 20 years old)
- Historical occurrences (>20 years old)
- Species range

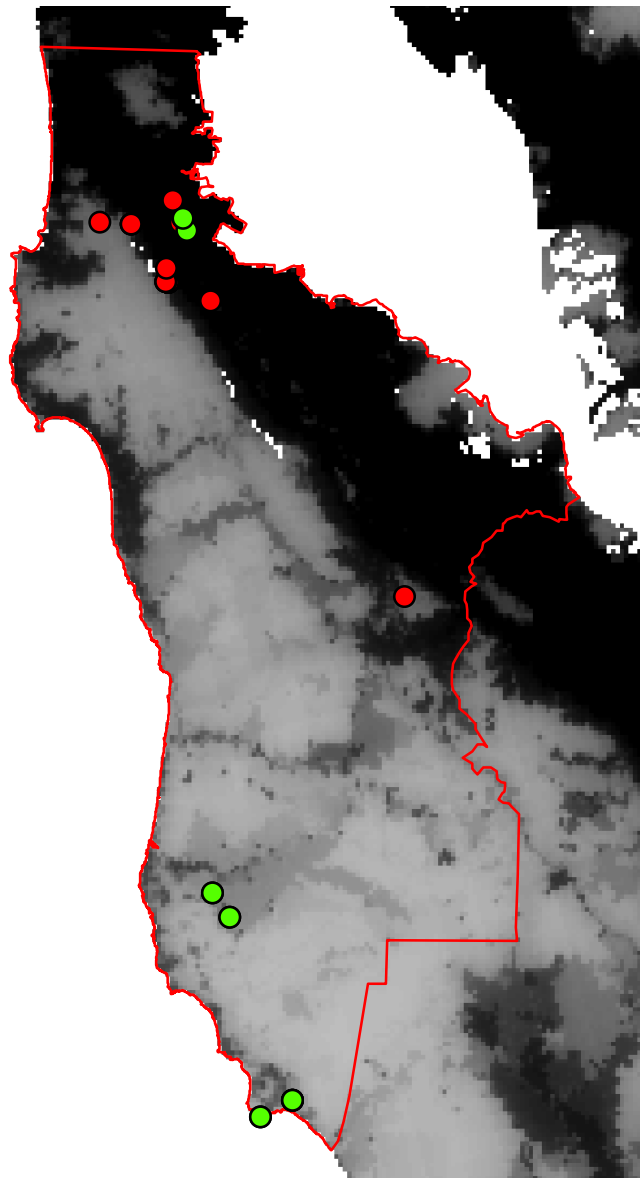
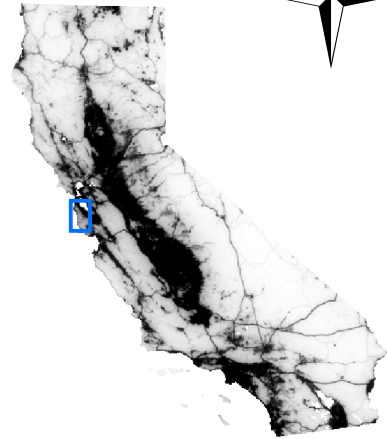


Natural Landscape Value

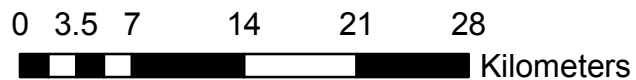
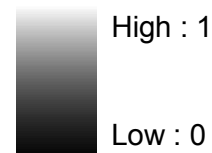


San Francisco Gartersnake *Thamnophis sirtalis tetrataenia*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range

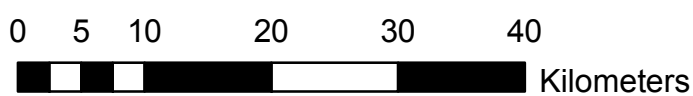
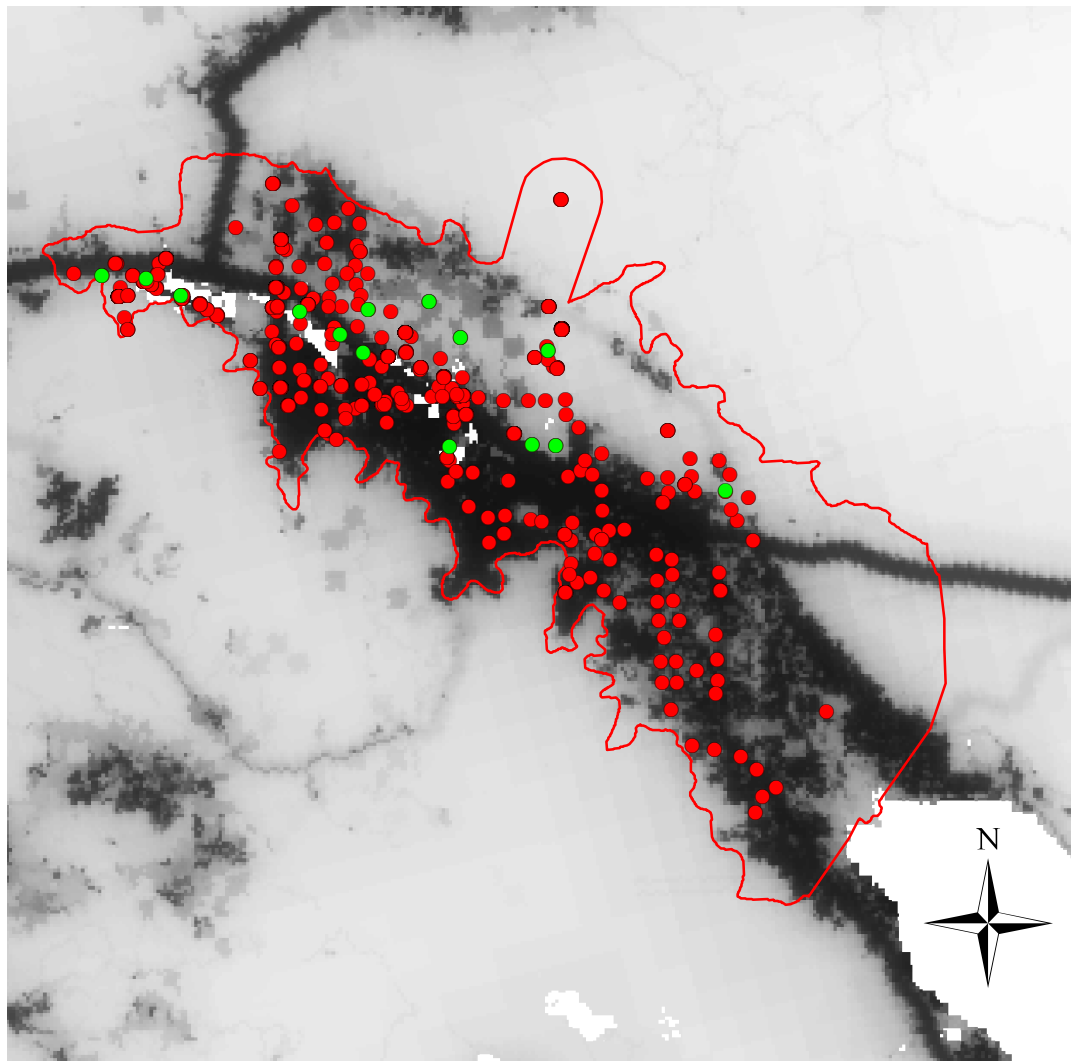
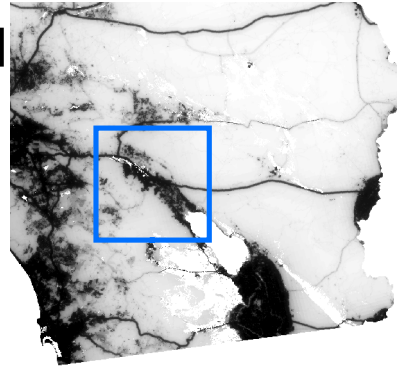


Natural Landscape Value

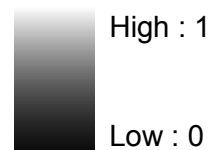


Coachella Valley Fringe-toed Lizard *Uma inornata*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



Natural Landscape Value

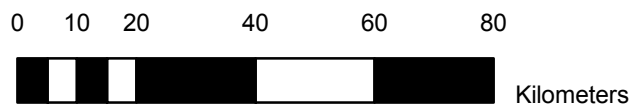
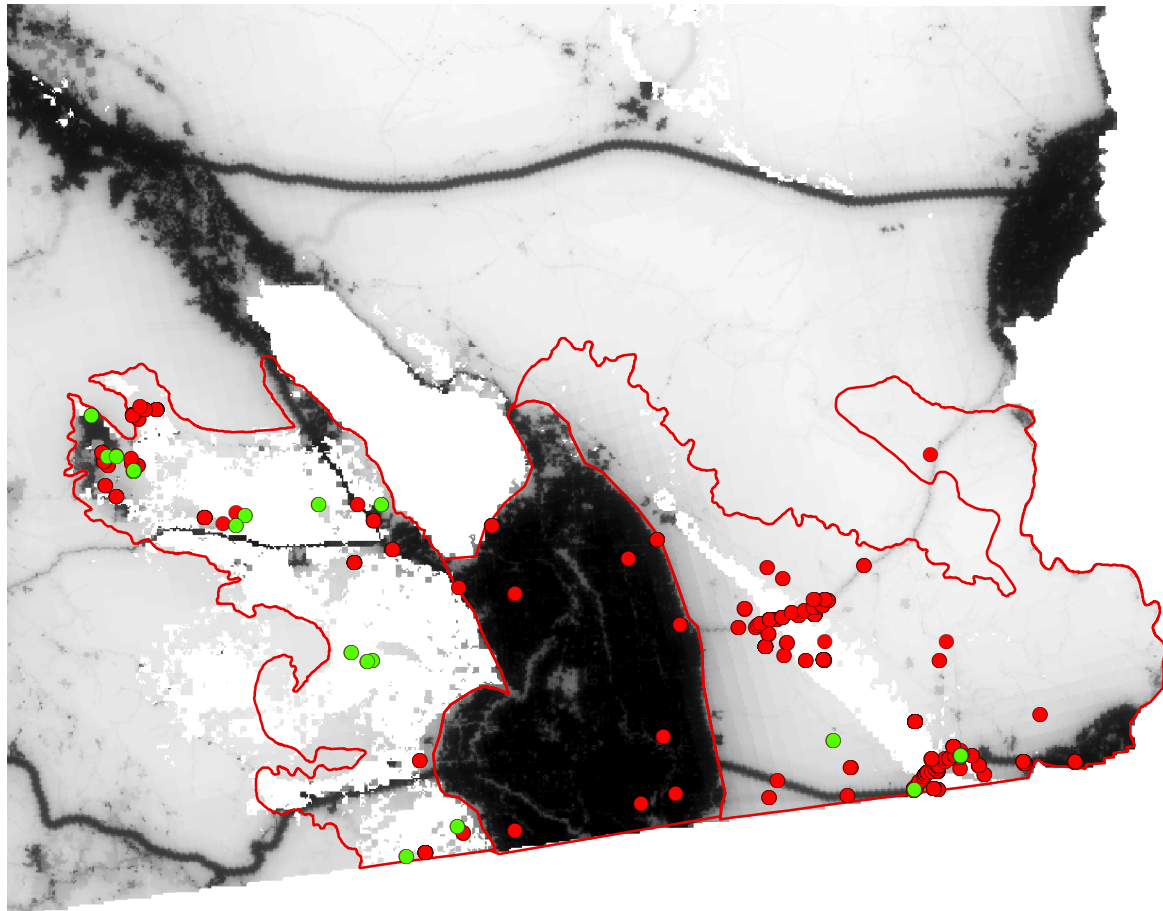
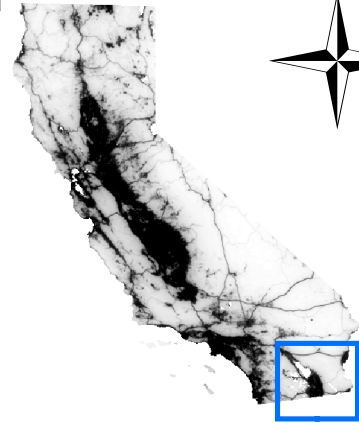


Colorado Desert Fringe-toed Lizard *Uma notata*

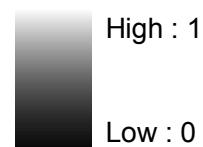


- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

Species range

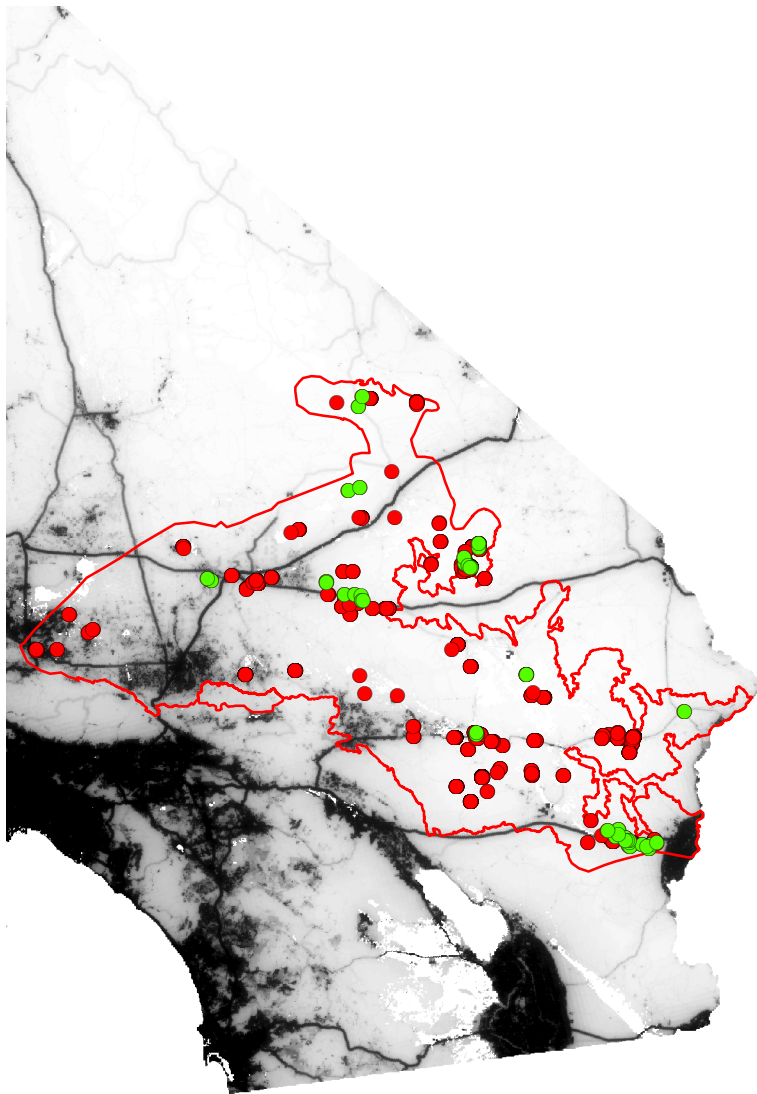
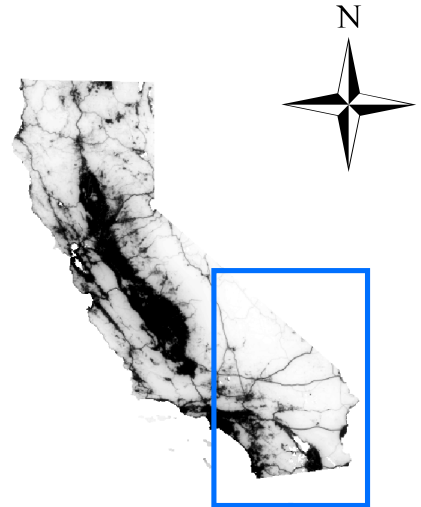


Natural Landscape Value

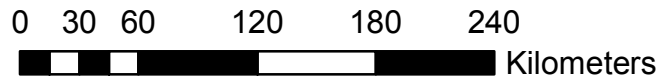
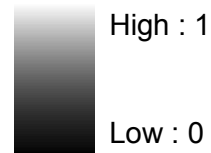


Mojave Fringe-toed Lizard *Uma scoparia*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



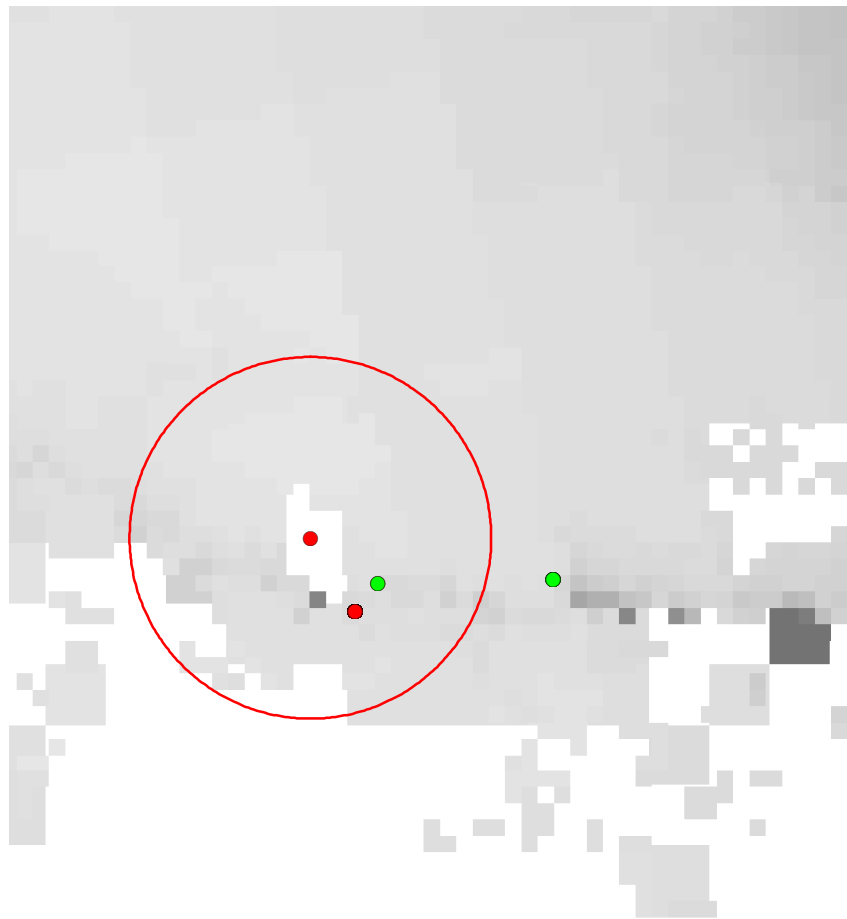
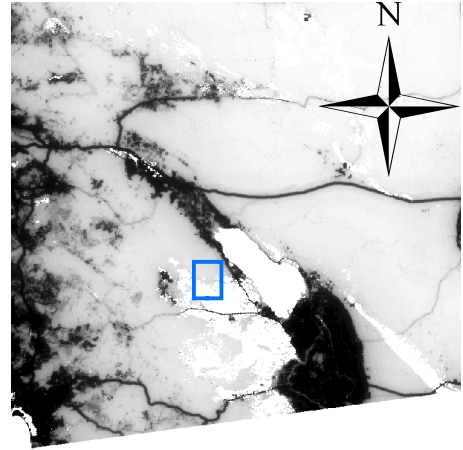
Natural Landscape Value



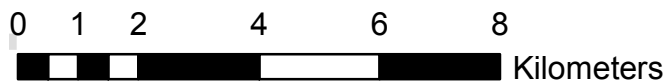
Sandstone Night Lizard *Xantusia gracilis*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

□ Species range

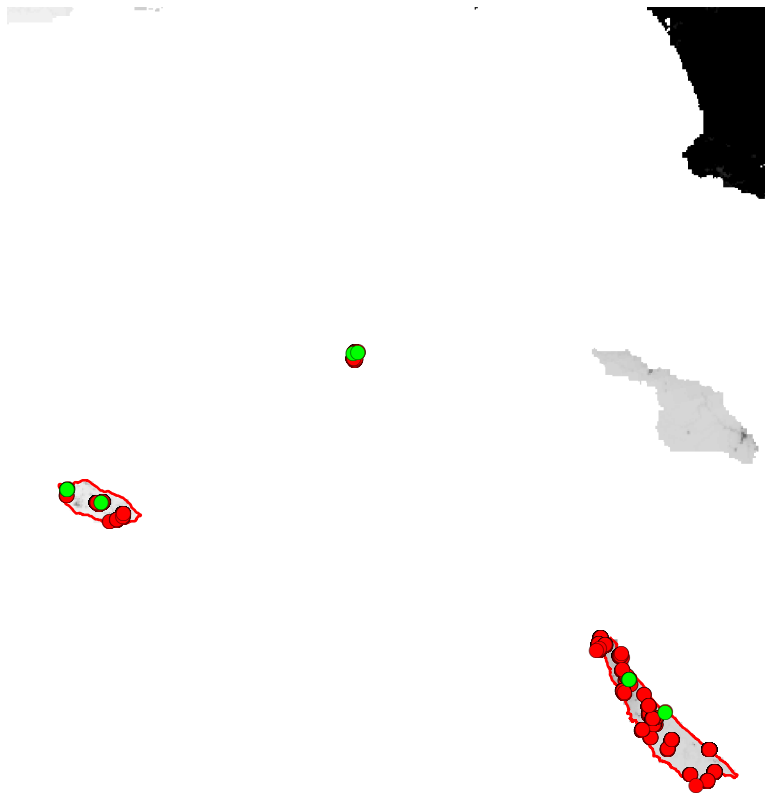
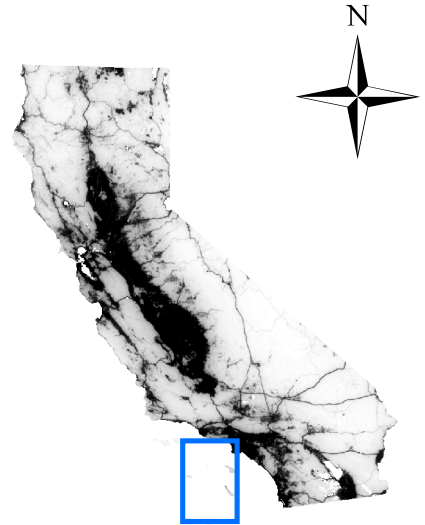


Natural Landscape Value

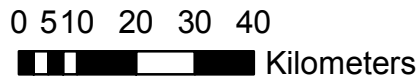
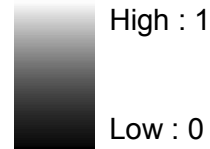


Island Night Lizard *Xantusia riversiana*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)
- Species range



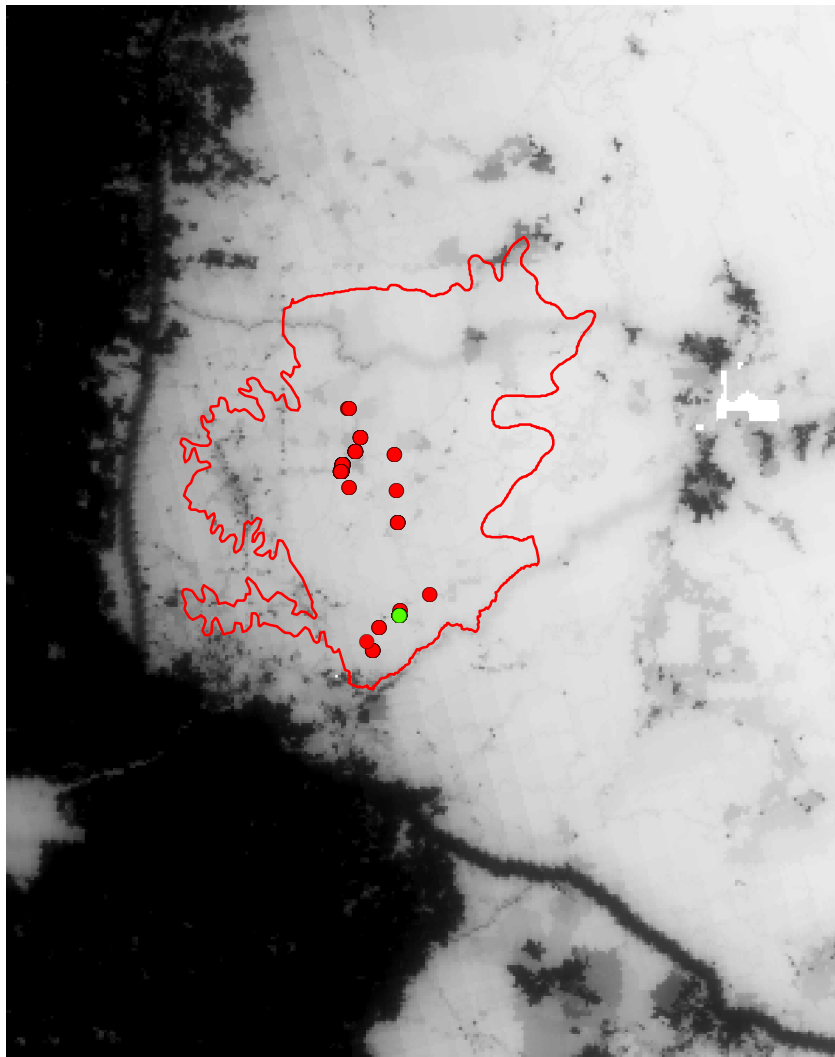
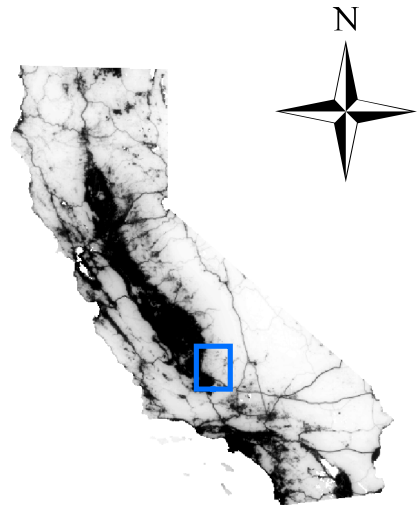
Natural Landscape Value



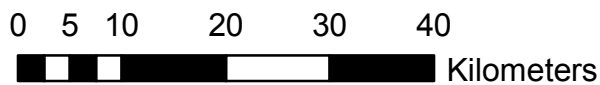
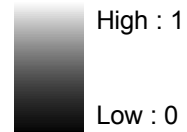
Sierra Night Lizard *Xantusia vigilis sierrae*

- Modern occurrences (< 20 years old)
- Historical occurrences (> 20 years old)

Species range



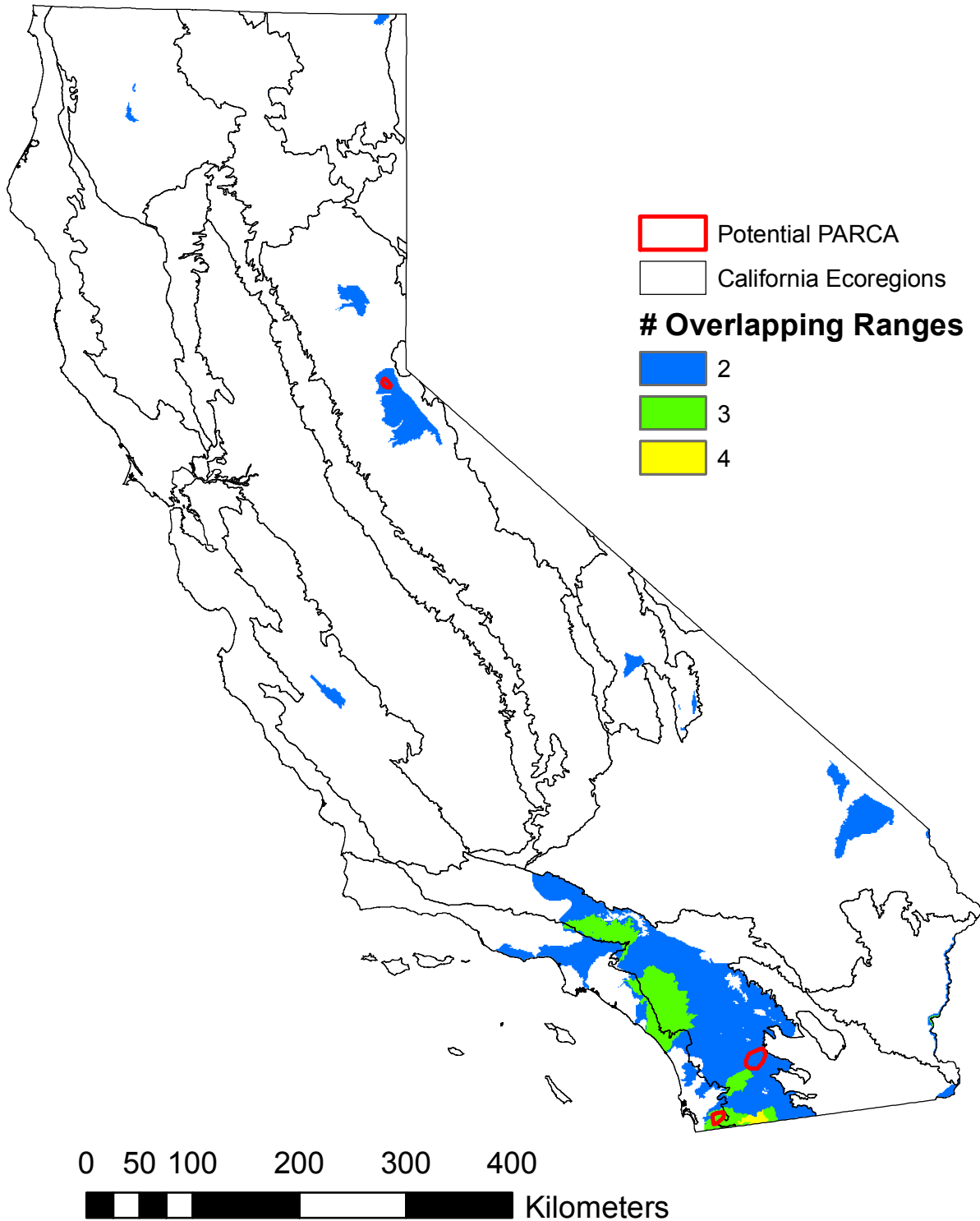
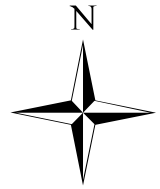
Natural Landscape Value



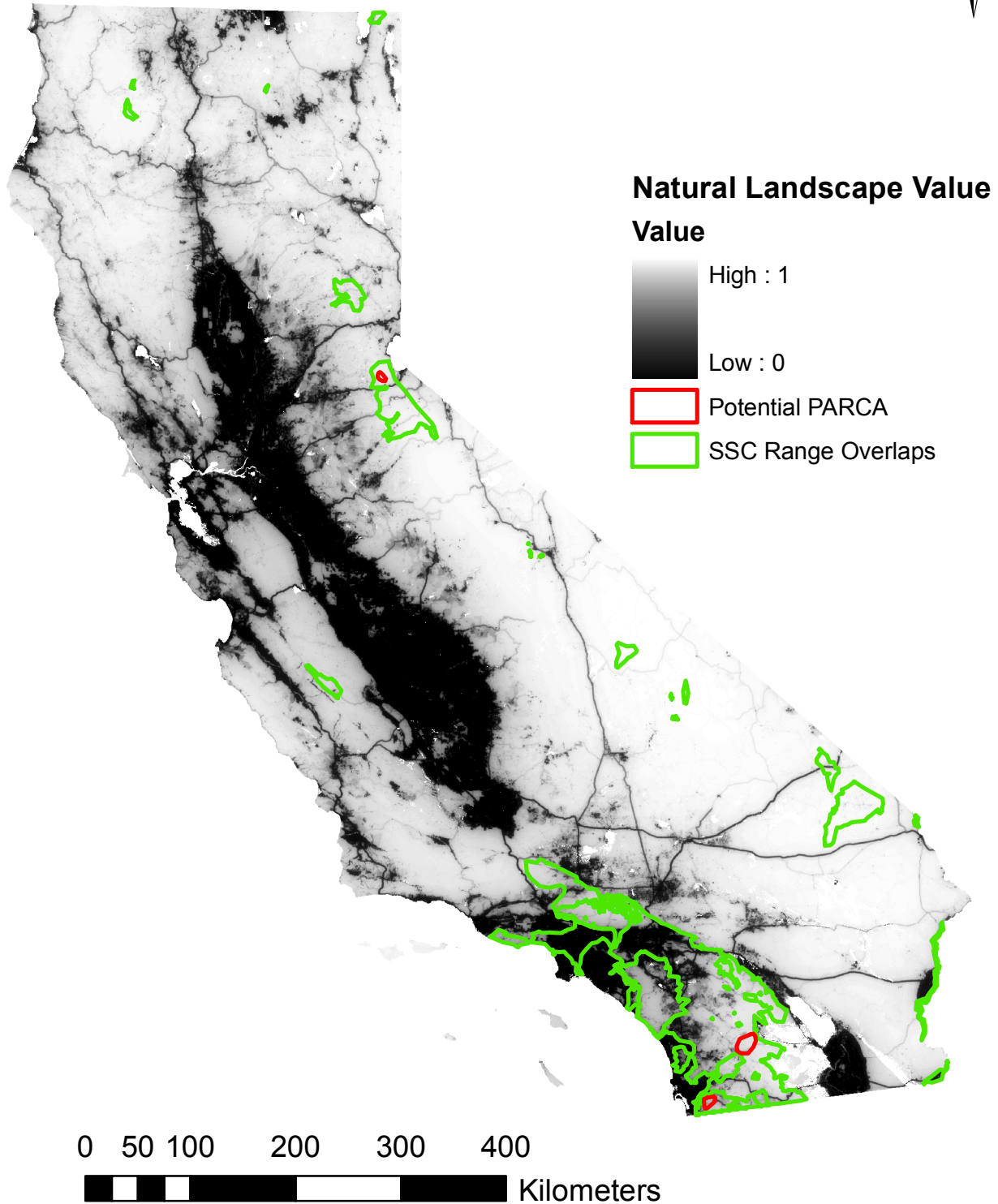
Criteria 4

On the following two pages, we identify all areas in California where two or more of the state's Species of Special Concern overlap. We identify potential candidate PARCAS that are supported by recent occurrences (<10 years) for each species. These areas and potential candidate PARCAs are overlaid on two different maps to demonstrate the underlying landscape viability (PARCA Criteria 1) as discussed previously. Challenges and potential obstacles to the strict implementation of PARCAs as described in Criteria 4 are discussed at the end of this document in the section titled Challenges to PARCA Implementation.

Criteria 4: State Vulnerable Species or Species of High Regional Responsibility



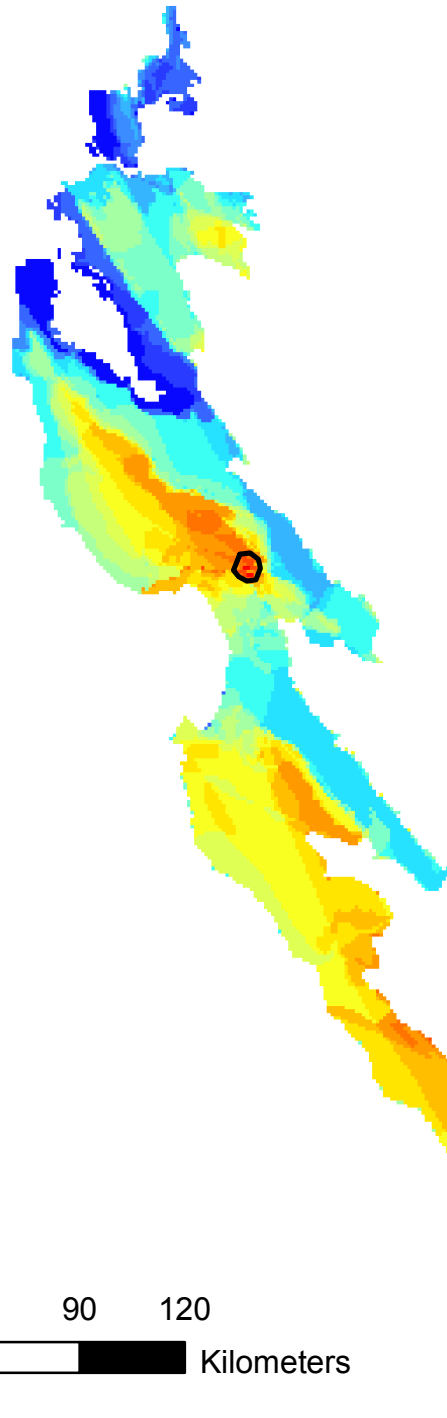
Criteria 4: State Vulnerable Species or Species of High Regional Responsibility



Criteria 5

The figures on the following pages demonstrate pilot implementation of PARCA Criteria 5, which prioritizes the designation of PARCAs in areas of high species richness for each ecoregion. Each map features a given ecoregion and displays total species richness for all reptiles and amphibians in that ecoregion. The potential candidate PARCAs drawn on each map identify the single area where total species richness is greatest and where landscape viability surpasses the 50% natural landscape threshold required to meet Criteria 1. Where multiple areas had similar species richness and landscape viability, we outlined more than one possible candidate PARCA. Challenges and potential obstacles to the strict implementation of PARCAs as described in Criteria 5 are discussed at the end of this document in the section titled Challenges to PARCA Implementation.

Central California Coast Ecoregion 261A



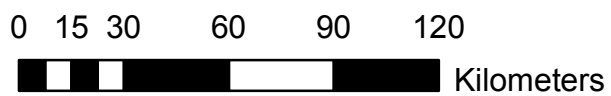
Species richness

Value

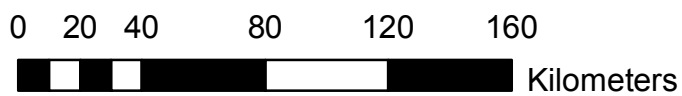
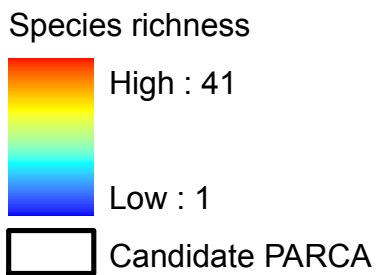
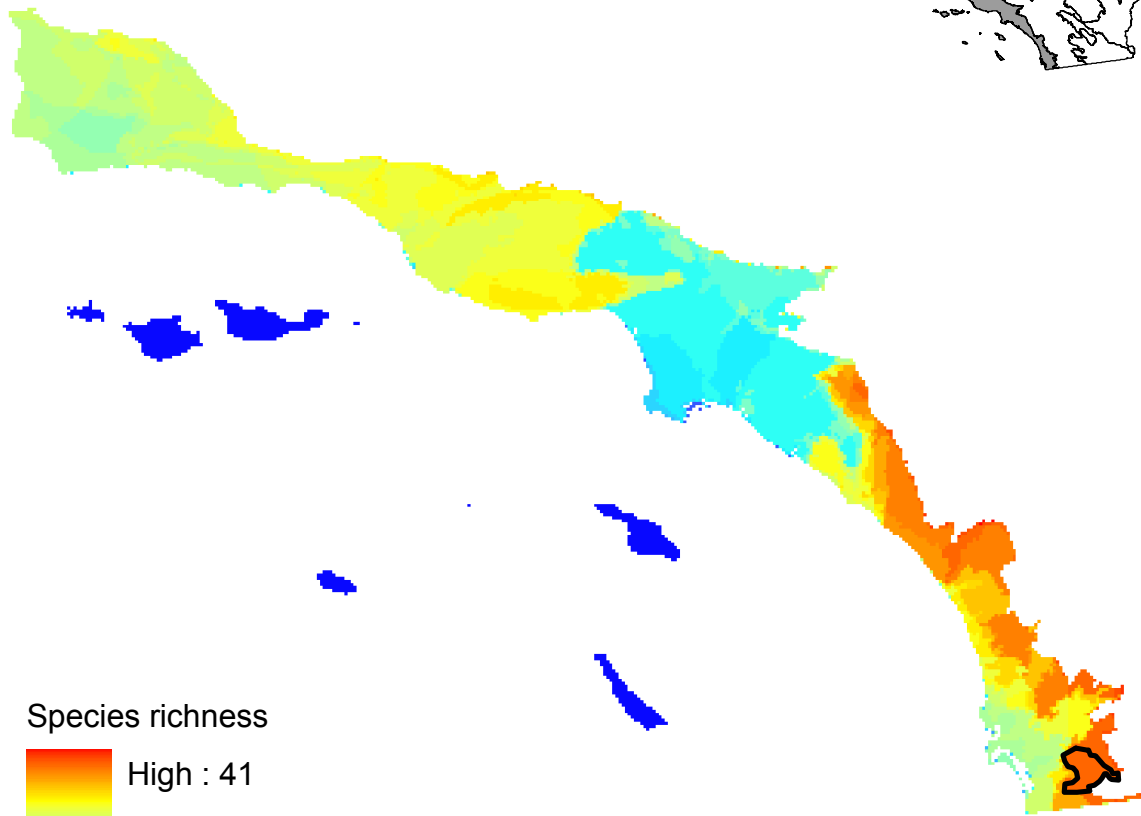
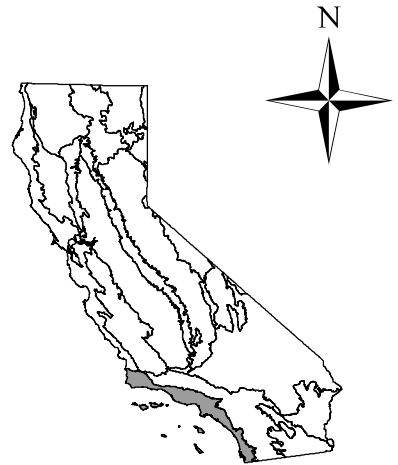
High : 35

Low : 5

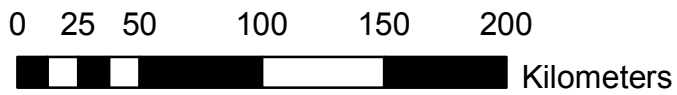
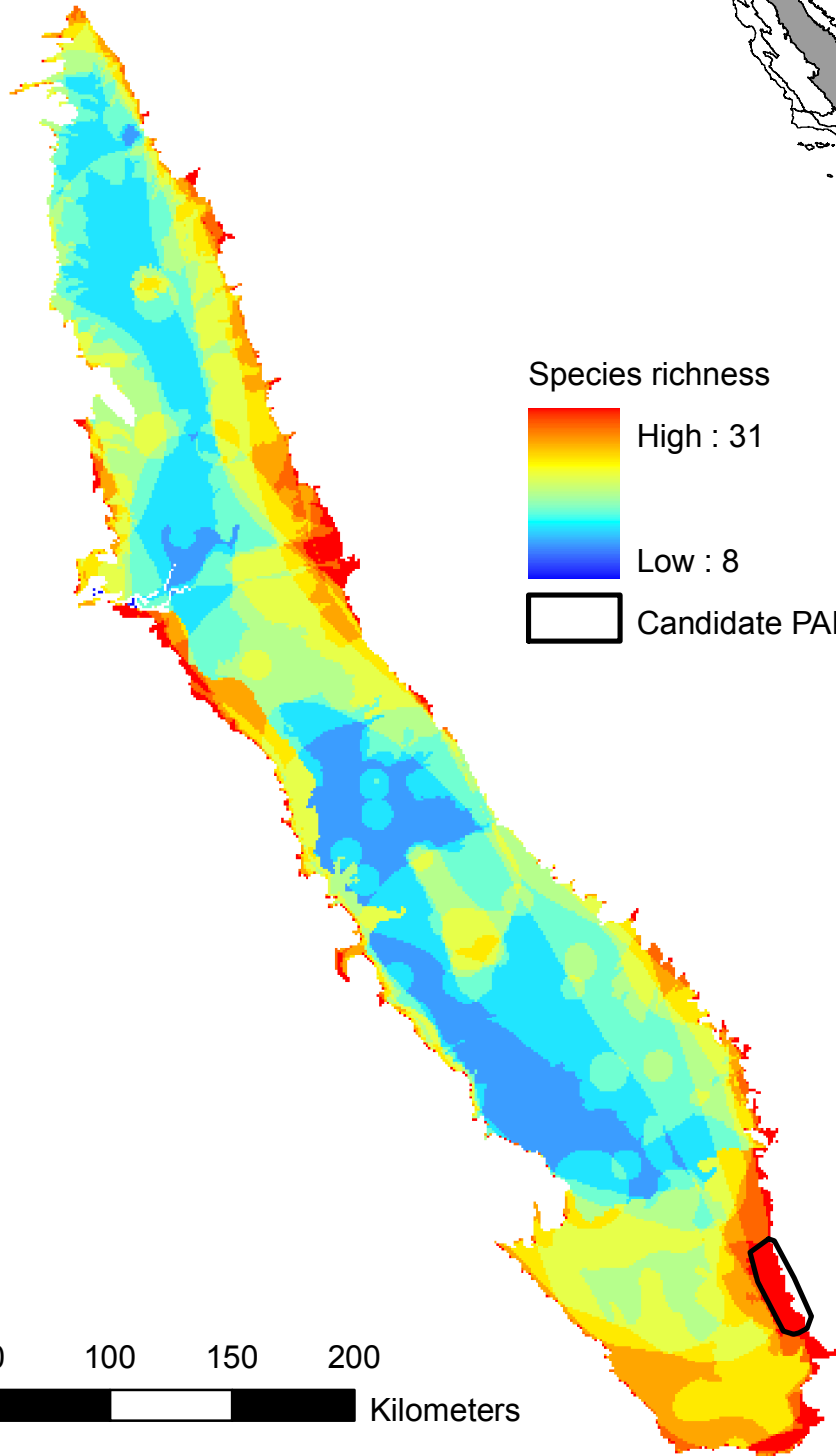
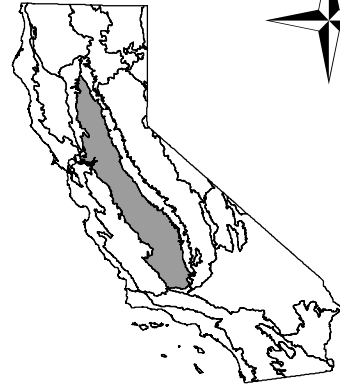
Candidate PARCA



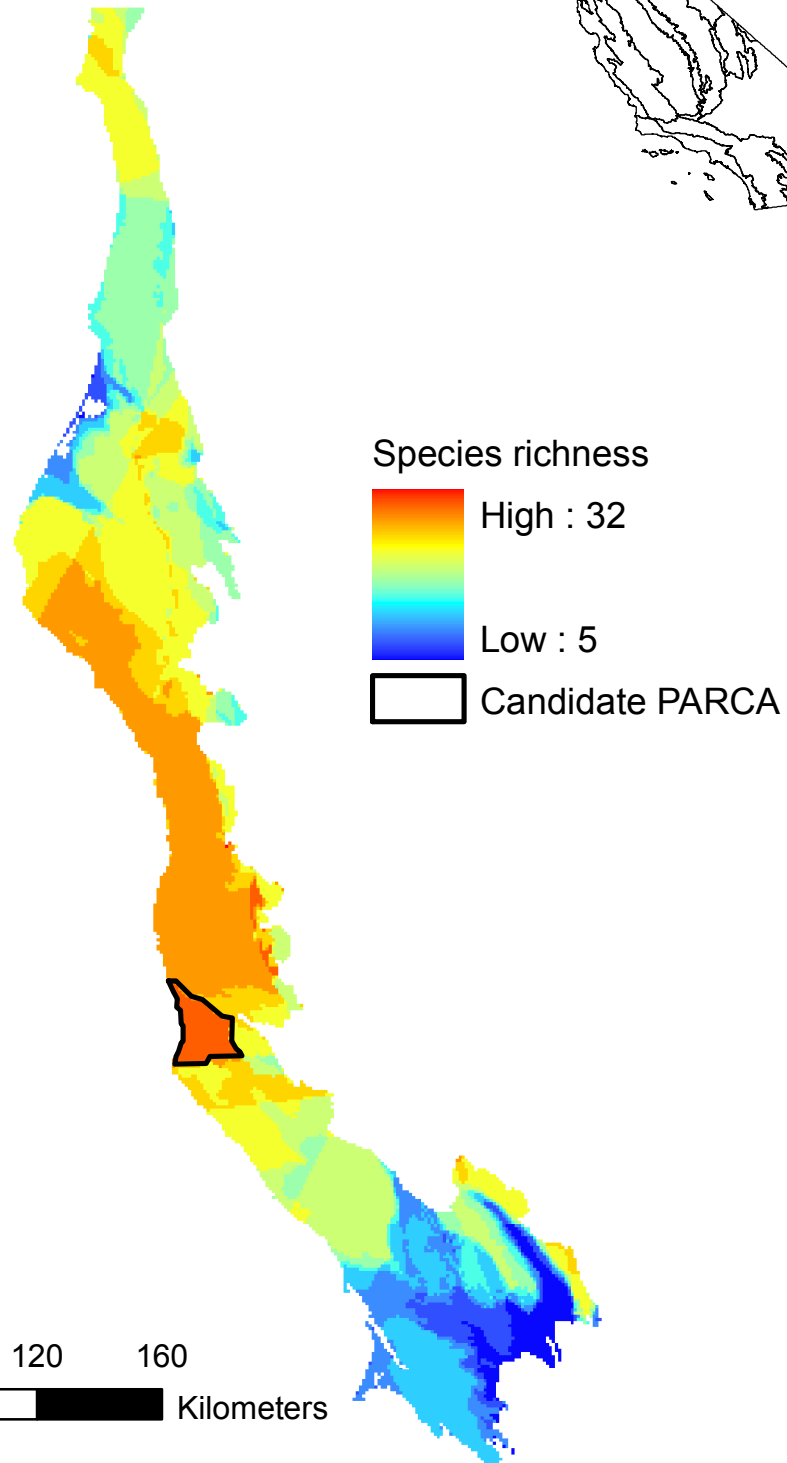
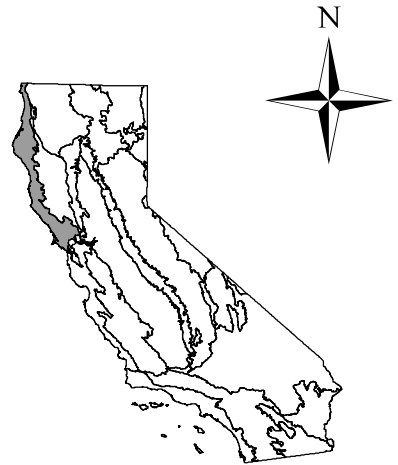
Southern California Coast Ecoregion 261B



Great Valley Ecoregion 262A

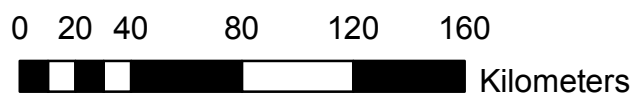
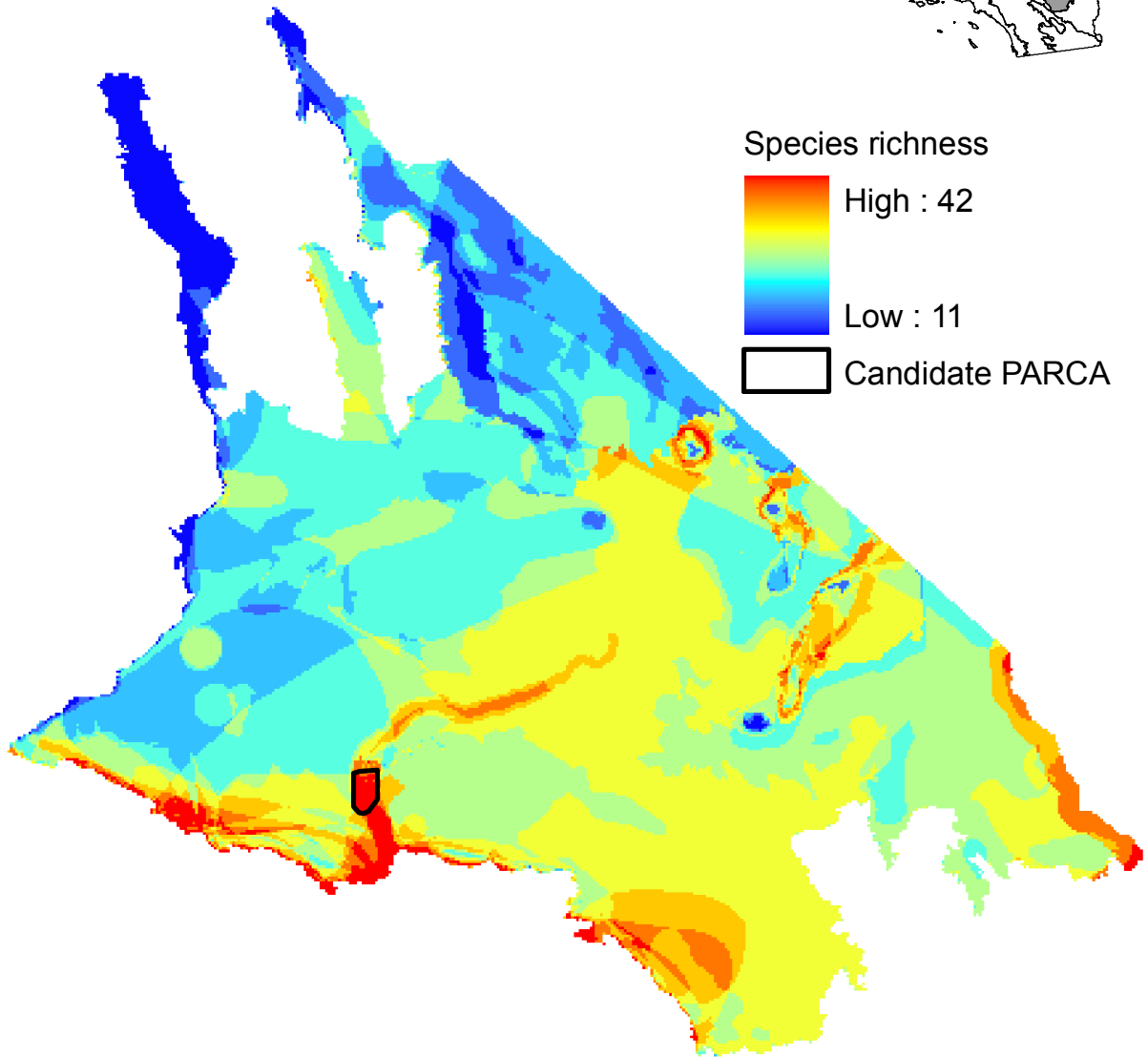
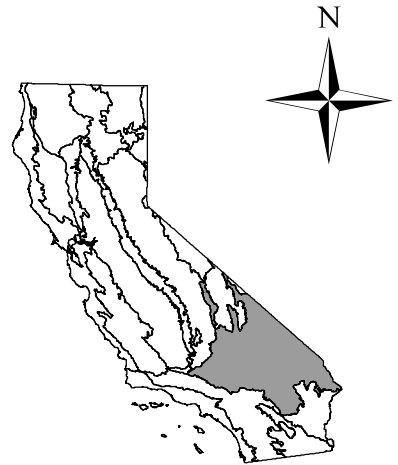


Northern California Coast Ecoregion 263A

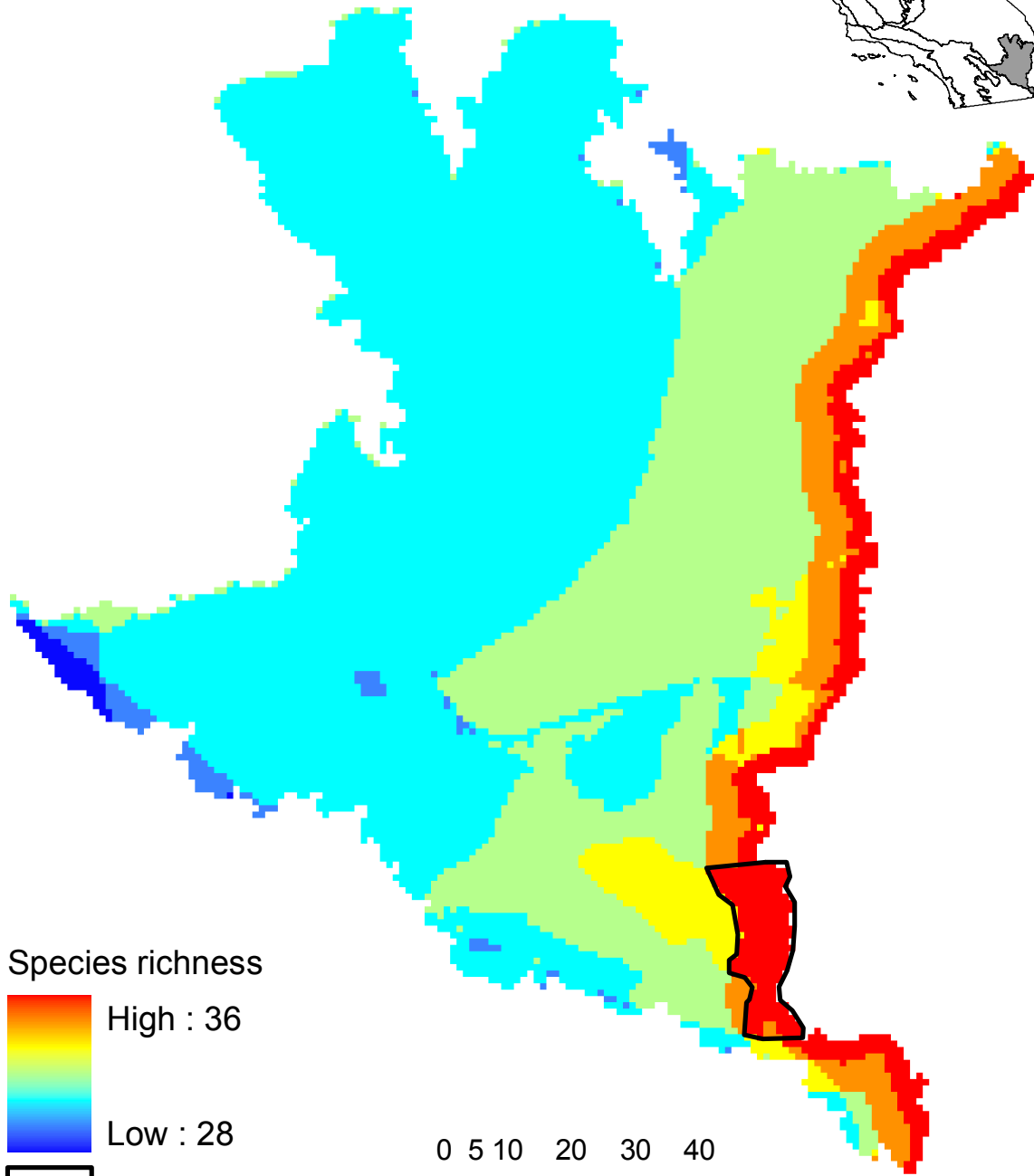
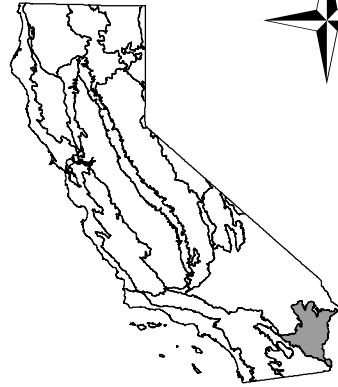


0 20 40 80 120 160
Kilometers

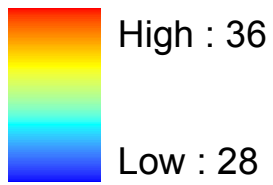
Mojave Desert Ecoregion 322A



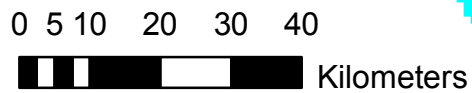
Sonoran Desert Ecoregion 322B



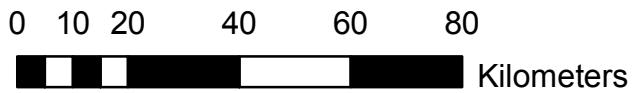
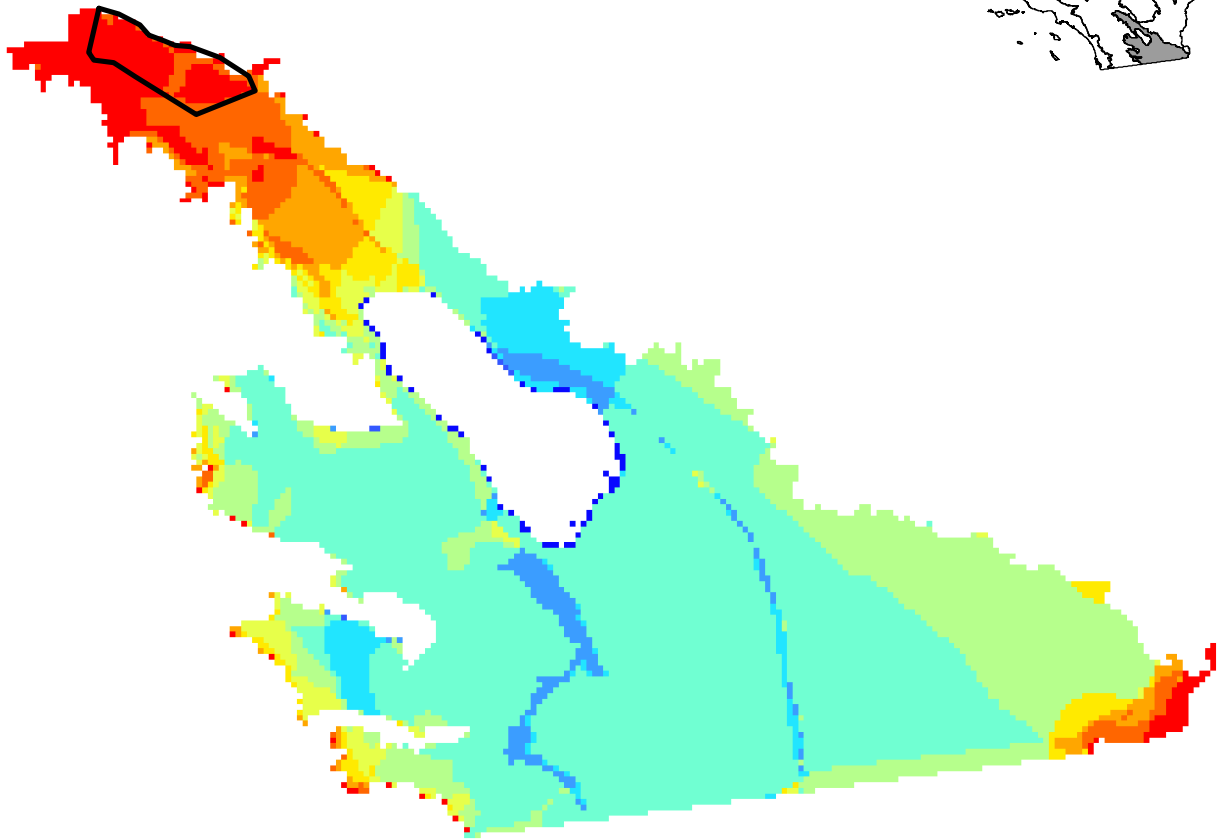
Species richness



 Candidate PARCA



Colorado Desert Ecoregion 322C



Species richness

High : 42

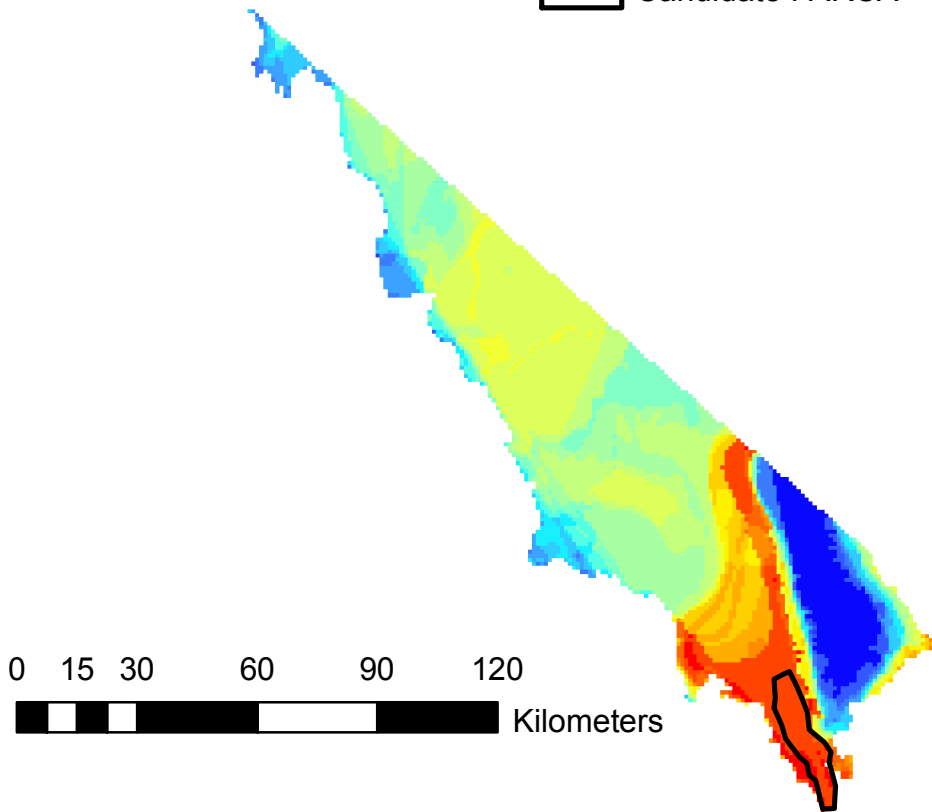
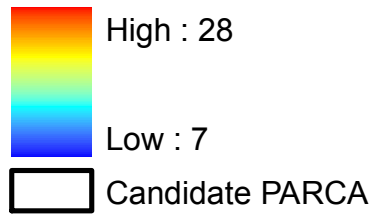
Low : 4

Candidate PARCA

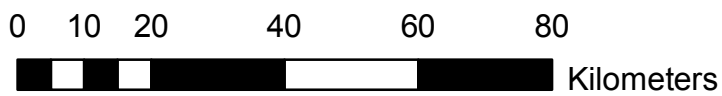
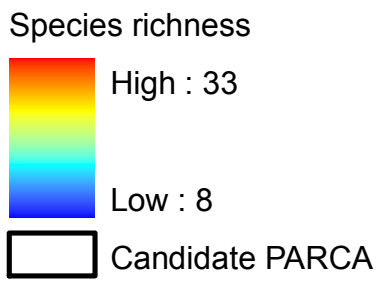
Mono Ecoregion 341D



Species richness



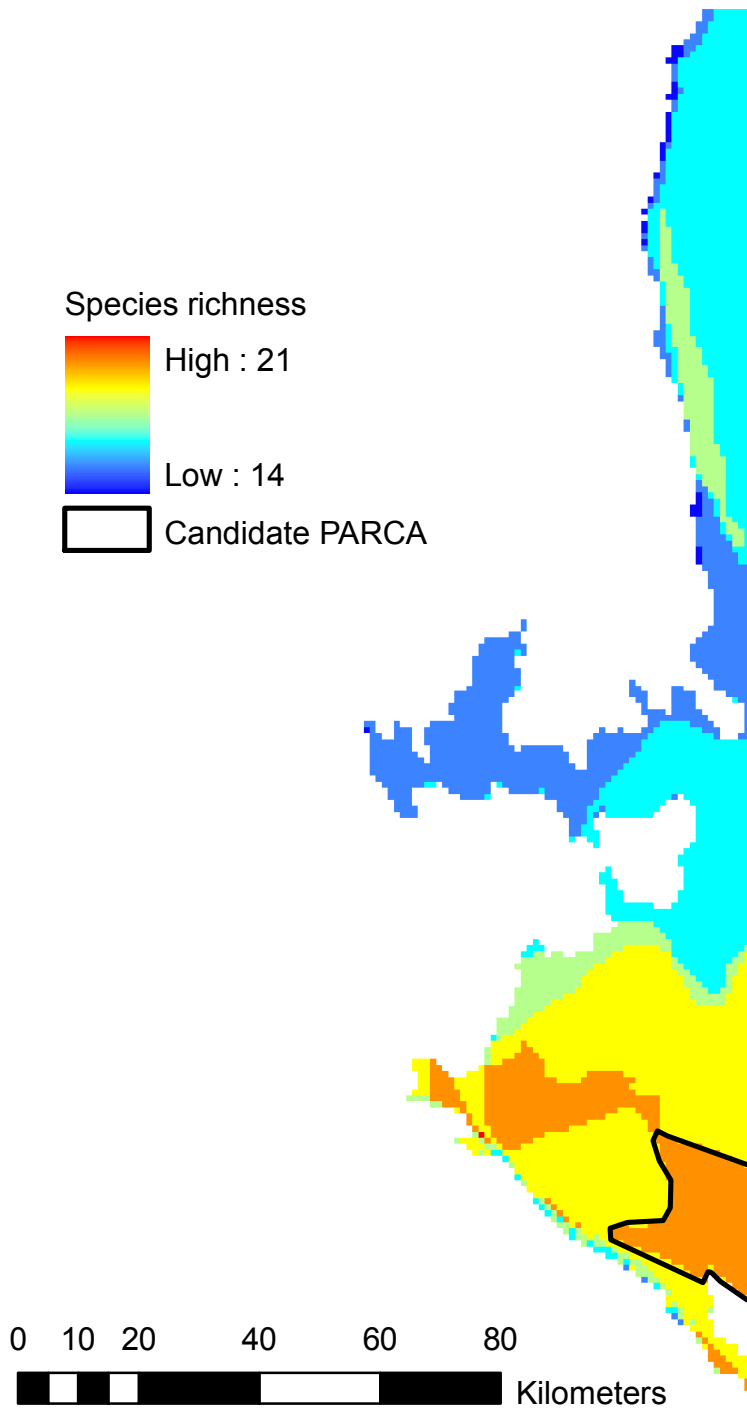
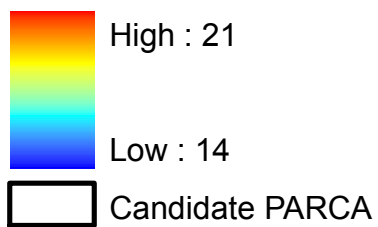
Southeastern Great Basin Ecoregion 341F



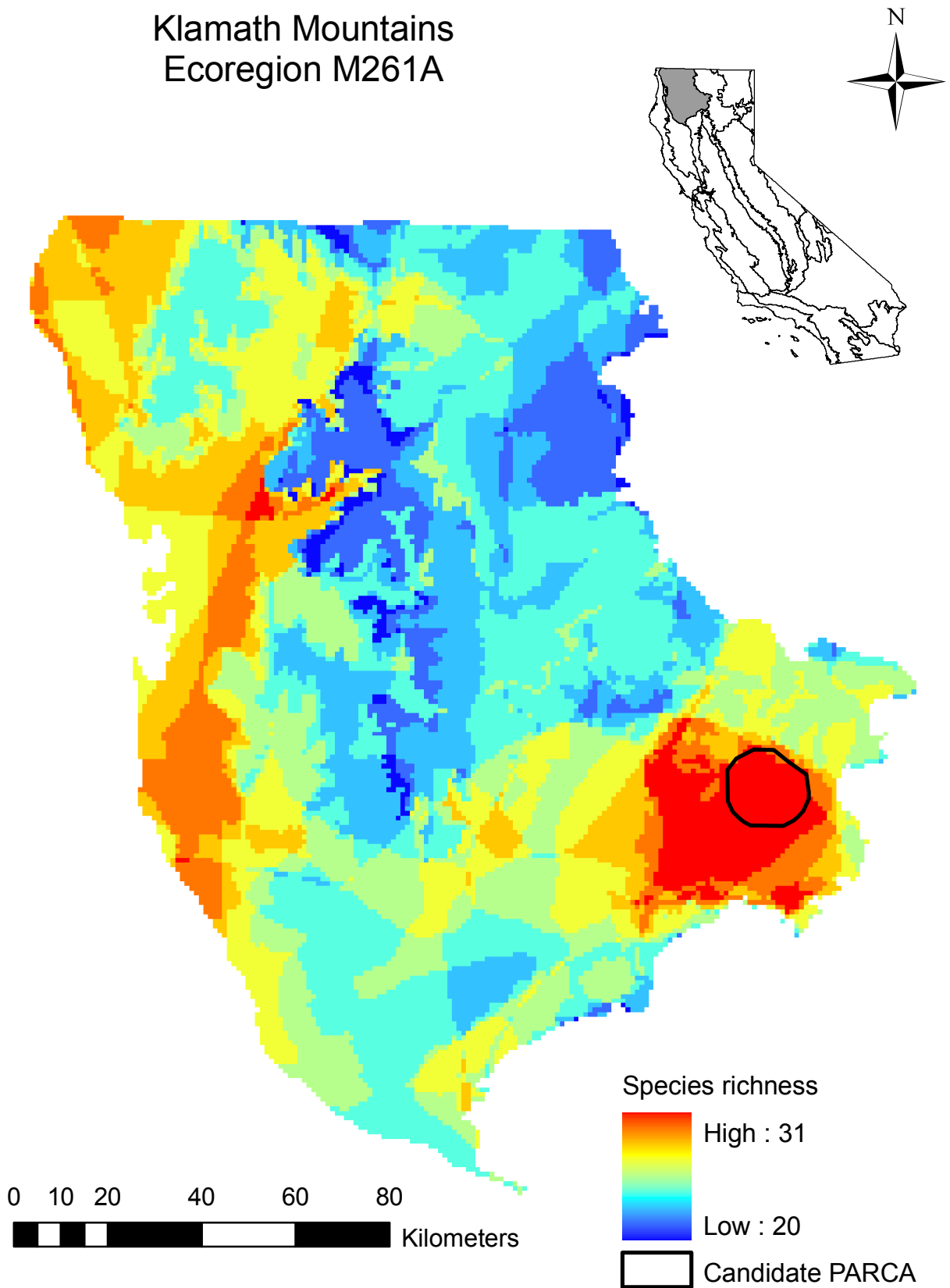
Northwestern Basin and Range Ecoregion 342B



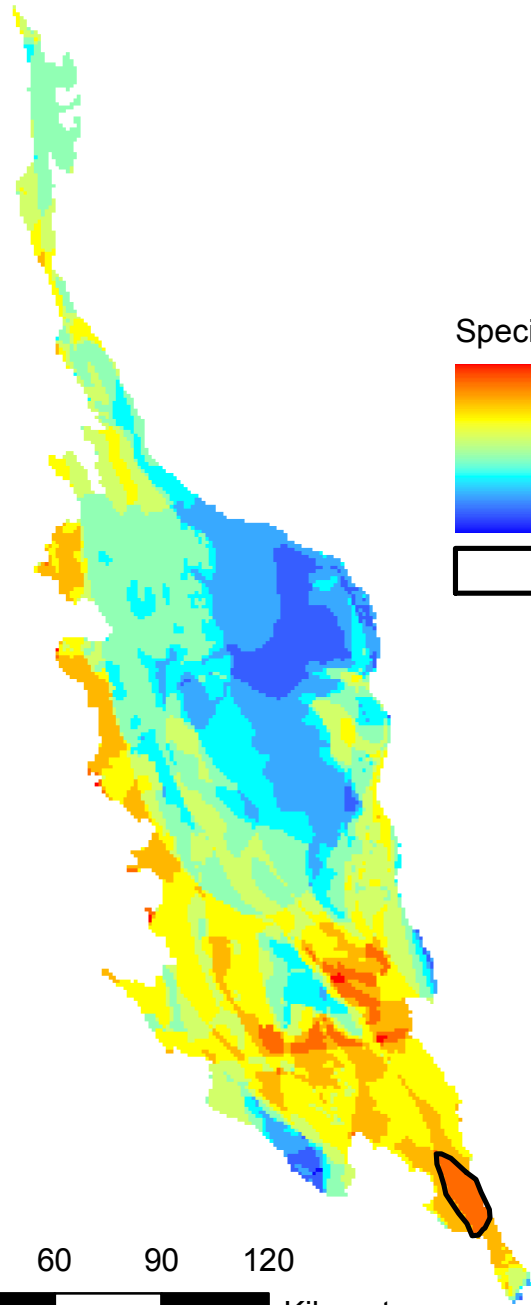
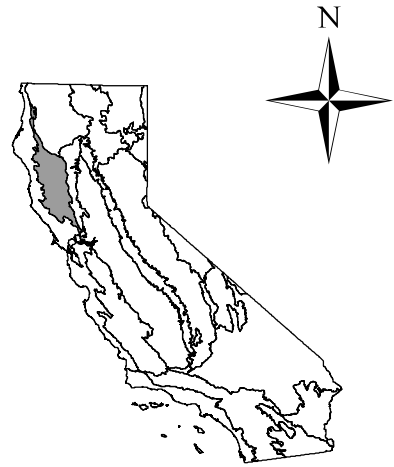
Species richness



Klamath Mountains Ecoregion M261A



Northern California Coast Ranges Ecoregion M261B



Species richness

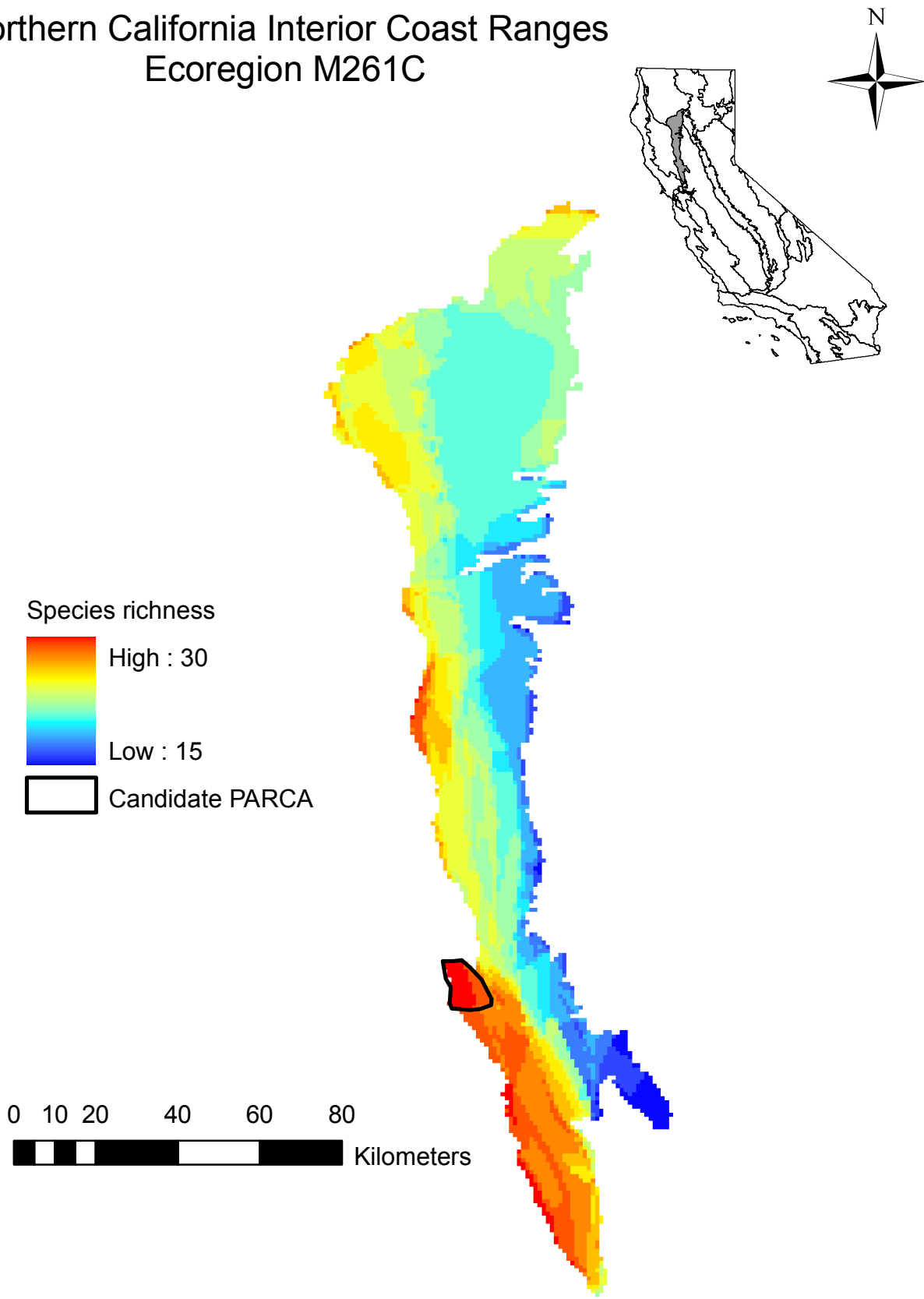
High : 33

Low : 23

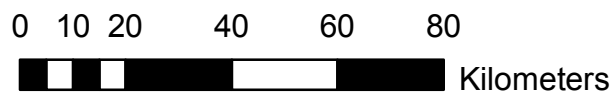
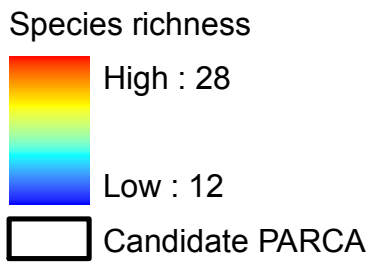
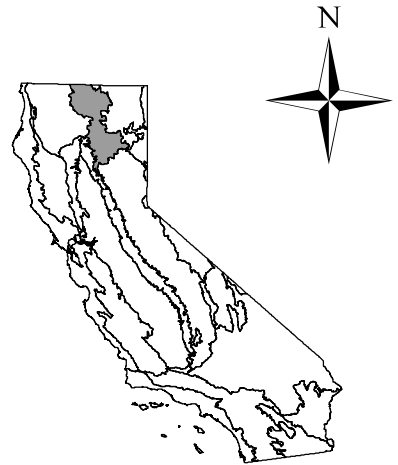
Candidate PARCA

0 15 30 60 90 120
Kilometers

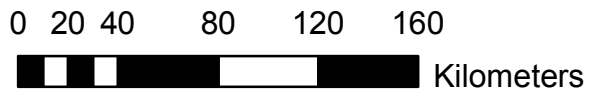
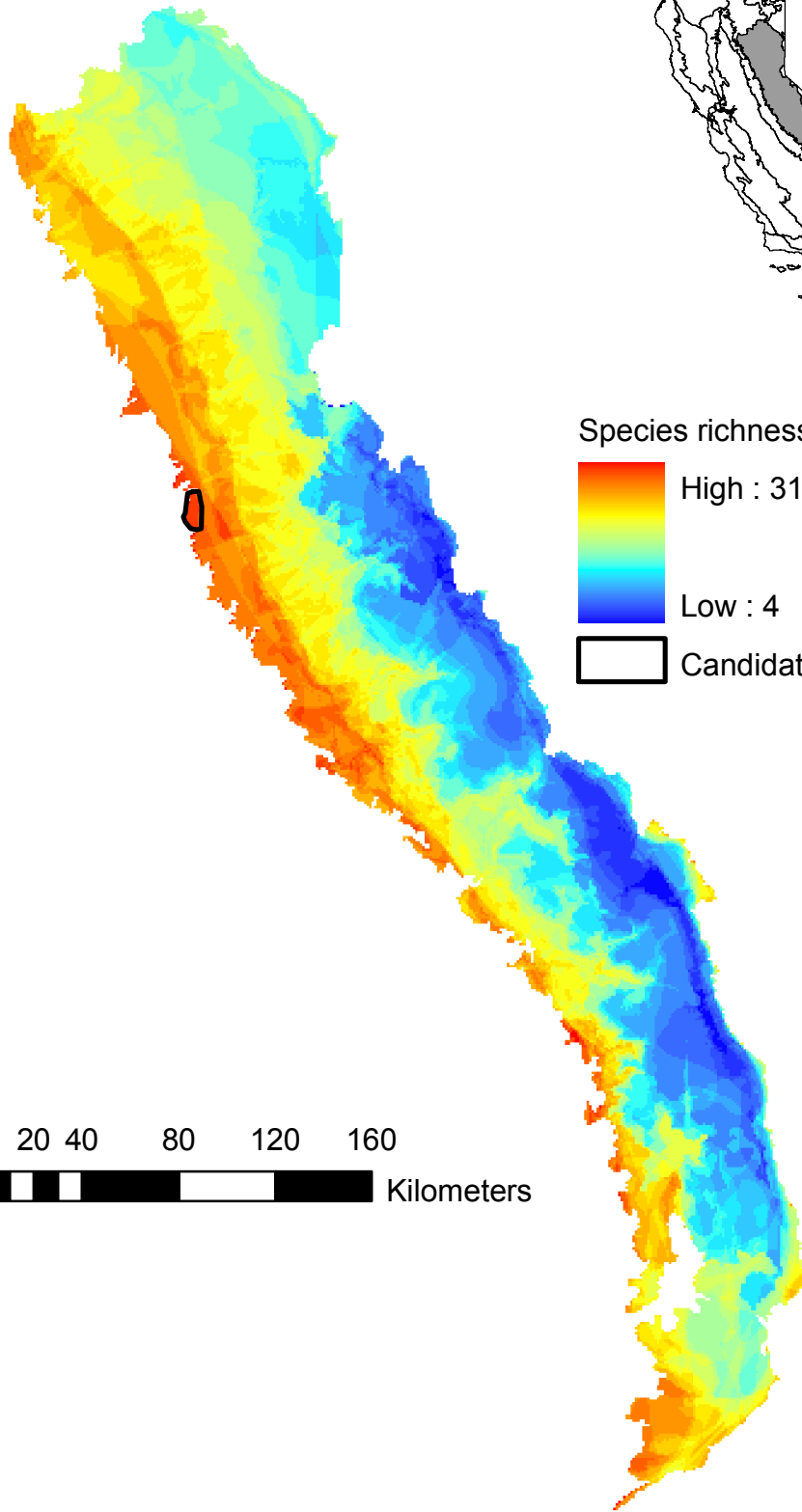
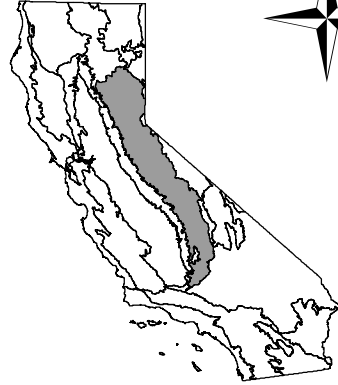
Northern California Interior Coast Ranges Ecoregion M261C



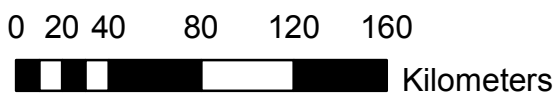
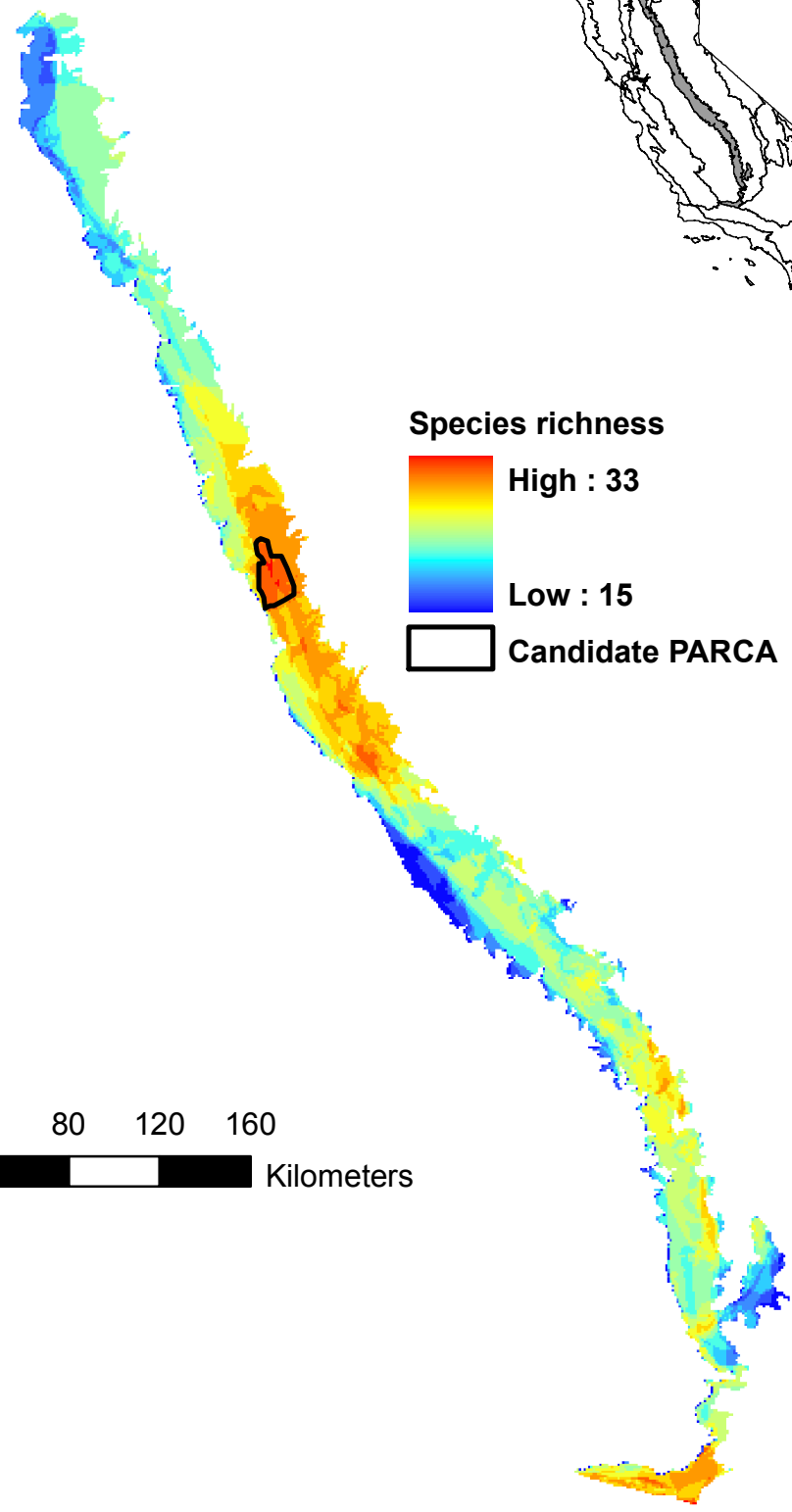
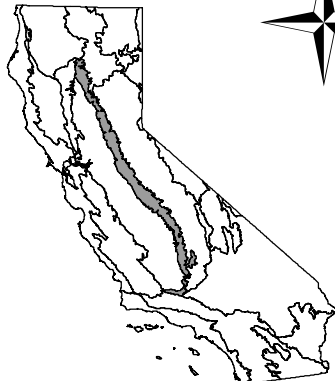
Southern Cascades Ecoregion M261D



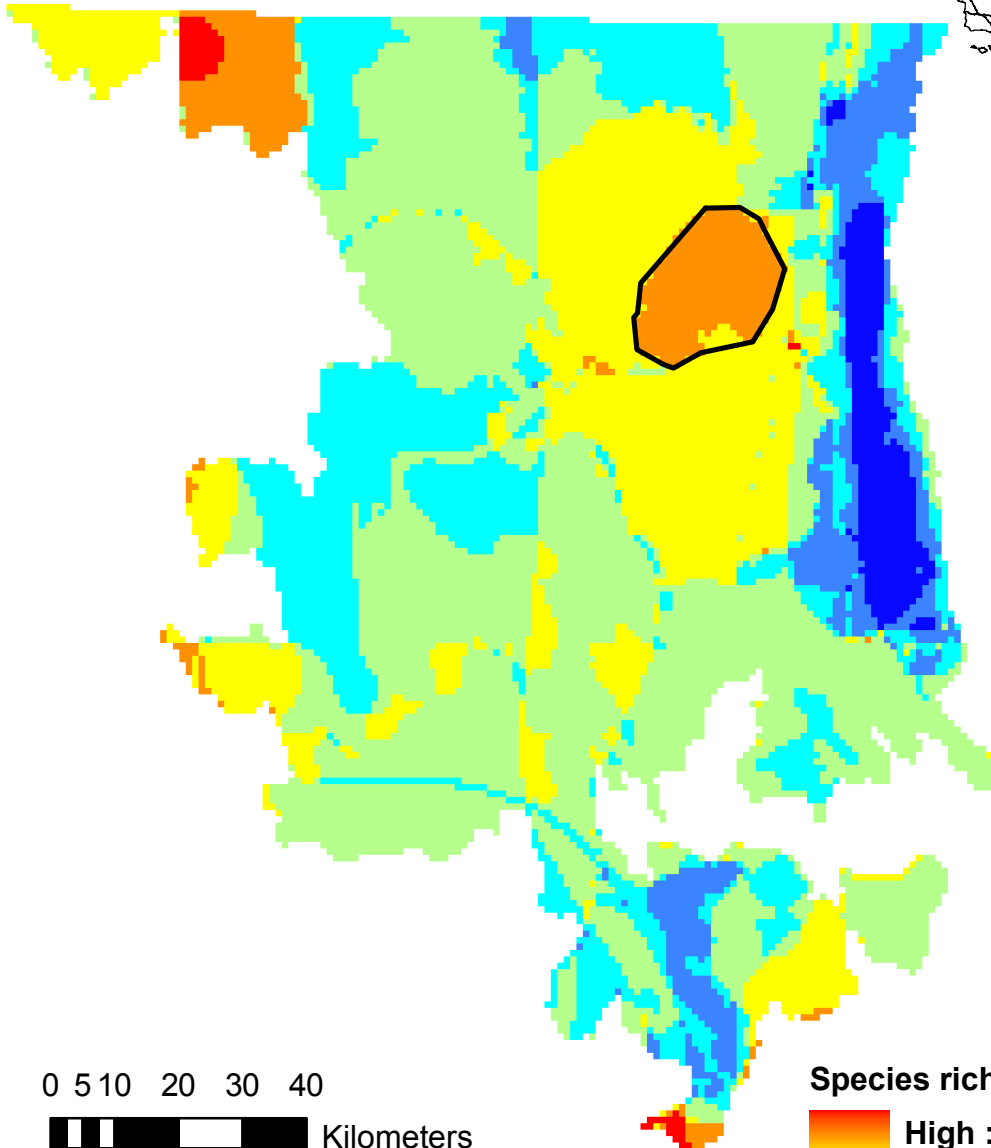
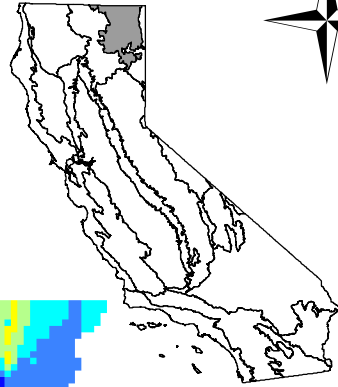
Sierra Nevada Ecoregion M261E



Sierra Nevada Foothills Ecoregion M261F



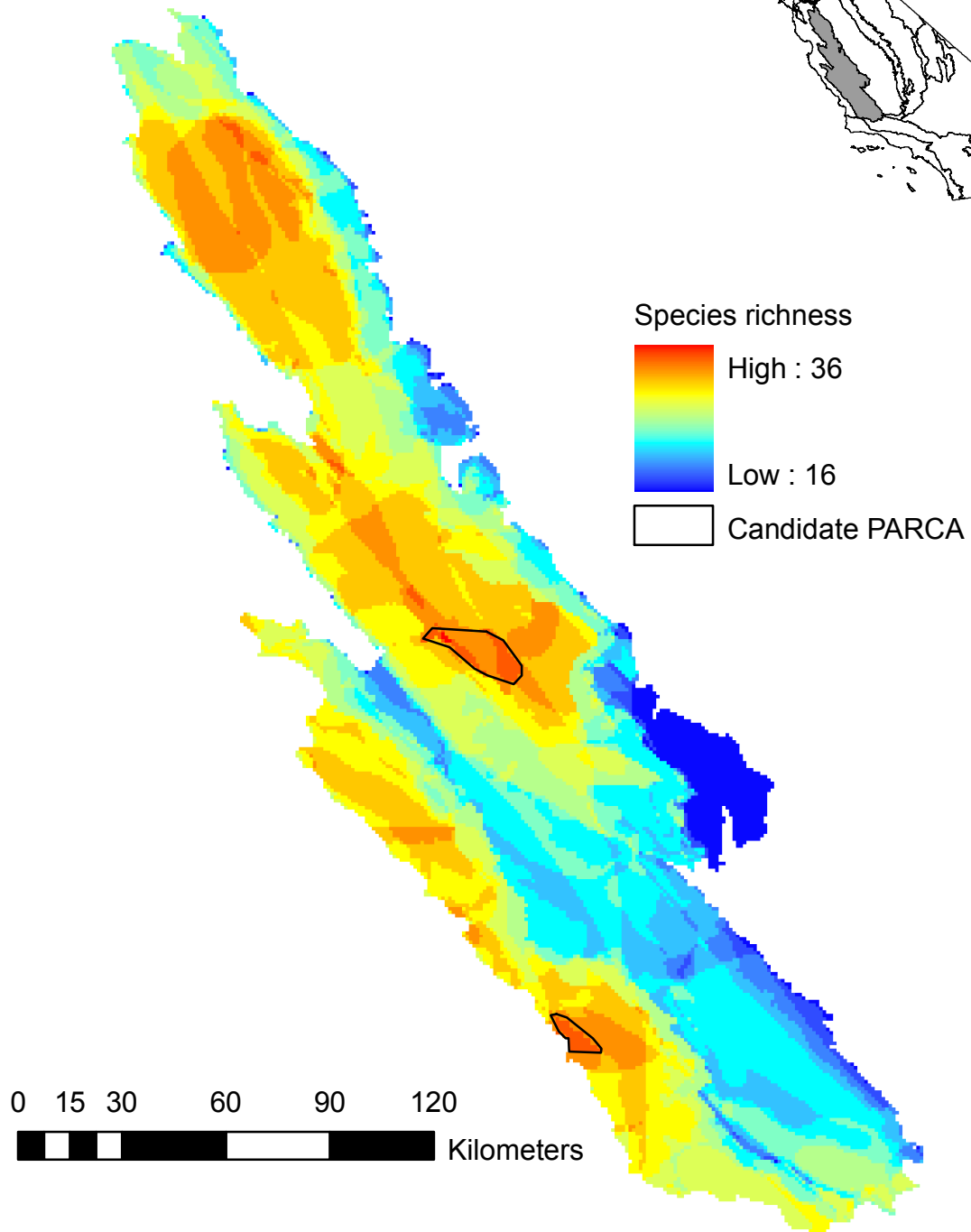
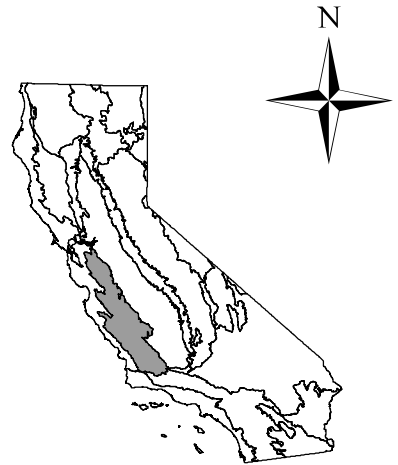
Modoc Plateau Ecoregion M261G



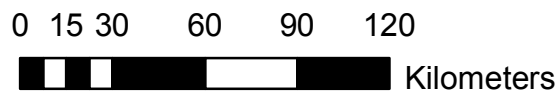
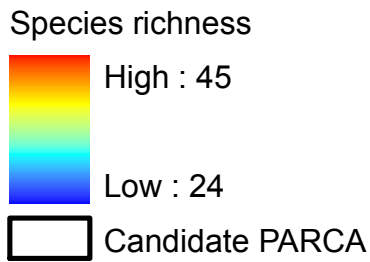
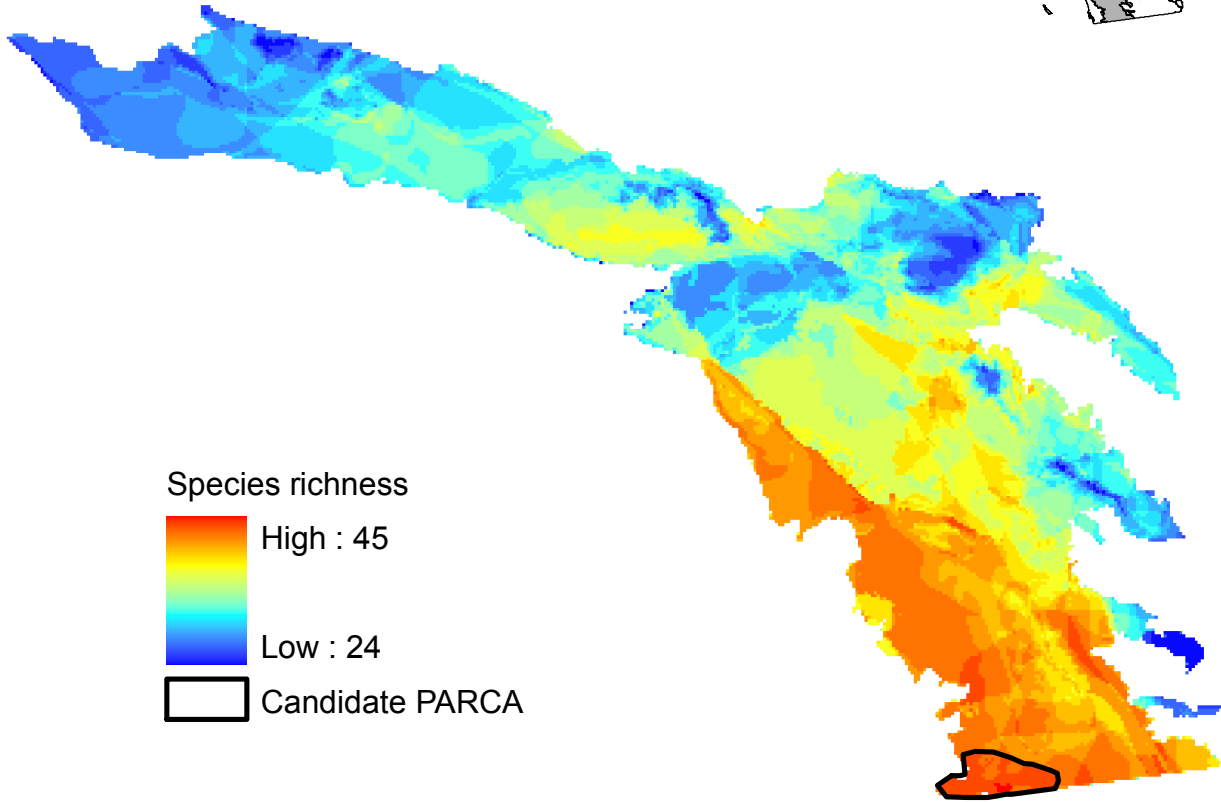
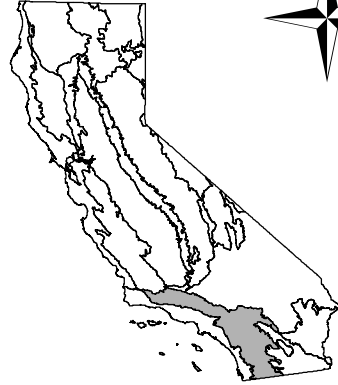
0 5 10 20 30 40
Kilometers

Species richness
High : 19
Low : 12
Candidate PARCA

Central California Coast Ranges Ecoregion M262A



Southern California Mountains and Valleys Ecoregion M262B



Challenges to PARCA Implementation

We have identified several challenges or obstacles to the identification of PARCAs in California if the criteria set forth in the PARCA implementation guidelines are to be strictly adhered to. Foremost, there is a pressing need for modern occurrence data. The designation of PARCAs places a premium on knowing not just the distribution of species in the state, but also the very recent distribution and status of these species. In California, despite having widespread occurrence data on many species across the state, there are too few records less than 10 years old or less than 20 years old for most species. To effectively identify the presence of species and establish important PARCAs, better, more recent, and more widespread occurrence data are needed.

A second challenge related to occurrence data is knowing which species truly occur in given ecoregions. More specifically, the distribution of many species is such that they are often restricted to some ecoregions for climate or environmental reasons. However, errors or imprecision in georeferenced occurrences, expert opinion, and some actual occurrences occasionally identify species as crossing ecoregional boundaries to occur just barely in adjacent ecoregions. It is difficult to know the degree to which those species marginally occurring in an ecoregion should reflect total species richness and whether those species actually do occur in a given ecoregion. This will affect the total count of species for each ecoregion and thus affects whether areas meet the minimum proportional thresholds for total richness in an ecoregion required to meet Criteria 5.

In addition to some uncertainty about total species richness for each ecoregion, it is often the case that the minimum proportional thresholds for total richness in an ecoregion required to meet Criteria 5 are in fact not met. In fact, in California, for most ecoregions, there are simply no areas where at least 75% of the total herpetofaunal species in an ecoregion or 90% of either amphibian or reptiles in an ecoregion all occur with overlapping distributions. A critical and unintended consequence of having to meet these thresholds for PARCA designation is that ecoregions of high species richness often have no areas that meet these thresholds whereas ecoregions of low species richness often have many areas that meet these thresholds. The result is a perverse scenario in which Criteria 5 contributes to the establishment of “richness PARCAs” only in ecoregions that are relatively depauperate of species whereas those ecoregions of high richness are left with no “richness PARCAs”. A better alternative would be to designate PARCAs in each ecoregion that do represent the highest species richness in that ecoregion. We have taken such an approach in our maps for Criteria 5 and this could also be extended to include 3 areas that each meet highest total richness, highest reptile richness, and highest amphibian richness.

There is yet one more obstacle to the implementation of Criteria 5 for PARCA designation. Many of California’s ecoregions extend beyond the borders of the state. However, Criteria 5 requires that PARCAs only be designated for areas that are among the three most speciose for each ecoregion. This is difficult to implement on a state-wide basis. At a minimum, a better alternative would be to allow each state to identify the three areas

in an ecoregion based on counts from within only their state, thus ignoring those species and areas that occur in an ecoregion outside the state's borders.

There are some additional challenges to the implementation of Criteria 2, 3, and 4. Notably, the size requirements are often onerous and would result in PARCAs that are excessively large and well beyond the scope of any current conservation management. Requiring at least 10, 20, or 30% of a species' range means that for wide-ranging species, areas as large as thousands of square kilometers would need to be designated as a PARCA (Table 2). This is simply not tenable. The alternative to these size requirements is to identify those areas that support the most important populations for each species. This is more achievable but will require the input of scientific experts with demonstrated knowledge of these species, their status, and their distributions.

A final challenge to the implementation of any PARCA is the need to meet Criteria 1 standards for landscape viability. Theobold's (2010) natural landscapes GIS layer is a reasonable and useful proxy for landscape viability. Using this tool, however, it becomes apparent that there are some highly imperiled taxa that meet Criteria 2 and 3 but which do not occur in areas that meet the landscape viability requirements for the minimum size requirement of 1,500 acres. For these species, there would simply be no opportunity to designate a PARCA.

References

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Table 1

Taxon	Common Name
<u>CAUDATA</u>	
AMBYSTOMATIDAE	
<i>Ambystoma californiense</i>	California Tiger Salamander
<i>Ambystoma californiense</i> "Santa Barbara"	Santa Barbara Tiger Salamander
<i>Ambystoma californiense</i> "Sonoma"	Sonoma Tiger Salamander
<i>Ambystoma gracile</i>	Northwestern Salamander
<i>Ambystoma macrodactylum croceum</i>	Santa Cruz Long-toed Salamander
<i>Ambystoma macrodactylum sigillatum</i>	Southern Long-Toed Salamander
DICAMPTODONTIDAE	
<i>Dicamptodon ensatus</i>	California Giant Salamander
<i>Dicamptodon tenebrosus</i>	Pacific Giant Salamander
PLETHODONTIDAE	
<i>Aneides ferreus</i>	Clouded Salamander
<i>Aneides flavipunctatus</i>	Black Salamander
<i>Aneides flavipunctatus niger</i>	Santa Cruz Black Salamander
<i>Aneides flavipunctatus "shasta"</i>	Shasta Black Salamander
<i>Aneides lugubris</i>	Arboreal Salamander
<i>Aneides vagrans</i>	Wandering Salamander
<i>Batrachoseps altasierrae</i>	Greenhorn Mtns Slender Salamander
<i>Batrachoseps attenuatus</i>	California Slender Salamander
<i>Batrachoseps bramei</i>	Fairview Slender Salamander
<i>Batrachoseps campi</i>	Inyo Mountains Salamander
<i>Batrachoseps diabolicus</i>	Hell Hollow Slender Salamander
<i>Batrachoseps gabrieli</i>	San Gabriel Mtns Slender Salamander
<i>Batrachoseps gavilanensis</i>	Gabilan Mtns Slender Salamander
<i>Batrachoseps gregarius</i>	Gregarius Slender Salamander
<i>Batrachoseps incognitus</i>	San Simeon Slender Salamander
<i>Batrachoseps kawia</i>	Sequoia Slender Salamander
<i>Batrachoseps luciae</i>	Santa Lucia Mtns Slender Salamander
<i>Batrachoseps major aridus</i>	Desert Slender Salamander
<i>Batrachoseps major major</i>	Garden Slender Salamander
<i>Batrachoseps minor</i>	Lesser Slender Salamander
<i>Batrachoseps nigriventris</i>	Black-bellied Slender Salamander

Batrachoseps pacificus
Batrachoseps regius
Batrachoseps relictus
Batrachoseps robustus
Batrachoseps simatus
Batrachoseps stebbinsi

Channel Islands Slender Salamander
Kings River Slender Salamander
Relictual Slender Salamander
Kern Plateau Salamander
Kern Canyon Slender Salamander
Tehachapi Slender Salamander

Ensatina eschscholtzii croceater
Ensatina eschscholtzii eschscholtzii
Ensatina eschscholtzii klauberi
Ensatina eschscholtzii oregonensis
Ensatina eschscholtzii picta
Ensatina eschscholtzii platensis
Ensatina eschscholtzii xanthoptica

Yellow-Blotched Ensatina
Monterey Ensatina
Large-Blotched Ensatina
Oregon Ensatina
Painted Ensatina
Sierra Nevada Ensatina
Yellow-eyed Ensatina

Hydromantes brunus
Hydromantes platycephalus
Hydromantes shastae

Limestone Salamander
Mount Lyell Salamander
Shasta Salamander

Plethodon asupak
Plethodon dunni
Plethodon elongatus
Plethodon stormi

Scott River Salamander
Dunn's Salamander
Del Norte Salamander
Siskiyou Mountains Salamander

RHYACOTRITONIDAE

Rhyacotriton variegatus

Southern Torrent Salamander

SALAMANDRIDAE

Taricha granulosa
Taricha rivularis
Taricha sierrae
Taricha torosa

Rough-skinned Newt
Red-bellied Newt
Sierra Newt
Coast Range Newt

ANURA

ASCAPHIDAE

Ascaphus truei

Coastal Tailed Frog

BUFONIDAE

Bufo alvarius
Bufo boreas boreas
Bufo boreas halophilus
Bufo californicus

Sonoran Desert Toad
Western Toad
California Western Toad
Arroyo Toad

Bufo canorus
Bufo cognatus
Bufo exsul
Bufo punctatus
Bufo woodhousii

Yosemite Toad
Great Plains Toad
Black Toad
Red-spotted Toad
Woodhouse's Toad

HYLIDAE

Pseudacris cadaverina
Pseudacris regilla

California Treefrog
Pacific Treefrog

RANIDAE

Rana aurora
Rana boylei
Rana cascadae
Rana draytonii
Rana muscosa
Rana pipiens
Rana pretiosa
Rana sierrae
Rana yavapaiensis

Northern Red-legged Frog
Foothill Yellow-legged Frog
Cascades Frog
California Red-legged Frog
Southern Mountain Yellow-legged Frog
Northern Leopard Frog
Oregon Spotted Frog
Sierra Nevada Yellow-legged Frog
Lowland Leopard Frog

SCAPHIOPODIDAE

Scaphiopus couchii

Couch's Spadefoot

Spea hammondi
Spea intermontana

Western Spadefoot
Great Basin Spadefoot

TESTUDINES

EMYDIDAE

Emys marmorata marmorata
Emys marmorata pallida

Northern Pacific Pond Turtle
Southern Pacific Pond Turtle

KINOSTERNIDAE

Kinosternon sonoriense

Sonoran Mud Turtle

TESTUDINIDAE

Gopherus agassizii

Desert Tortoise

SQUAMATA - LIZARDS

ANGUIDAE

Elgaria coerulea coerulea

San Francisco Alligator Lizard

Elgaria coerulea palmeri
Elgaria coerulea shastensis
Elgaria coerulea principis
Elgaria multica rinata multica rinata
Elgaria multica rinata scincicauda
Elgaria multica rinata webbii
Elgaria panamintina

Sierra Nevada Alligator Lizard
Shasta Alligator Lizard
Northwestern Alligator Lizard
California Alligator Lizard
Oregon Alligator Lizard
San Diego Alligator Lizard
Panamint Alligator Lizard

ANNIELLIDAE

Anniella pulchra pulchra
Anniella pulchra nigra

Silvery Legless Lizard
Black Legless Lizard

CROTOPHYTIDAE

Crotaphytus bicinctores
Crotaphytus vestigium

Great Basin Collared Lizard
Baja California Collared Lizard

Gambelia copeii
Gambelia sila
Gambelia wislizenii

Cope's Leopard Lizard
Blunt-nosed Leopard Lizard
Long-nosed Leopard Lizard

GEKKONIDAE

Coleonyx switaki
Coleonyx variegatus abbotti
Coleonyx variegatus variegatus

Barefoot Gecko
San Diego Banded Gecko
Desert Banded Gecko

Phyllodactylus nocticolus

Leaf-toed Gecko

HELODERMATIDAE

Heloderma suspectum cinctum

Banded Gila Monster

IGUANIDAE

Dipsosaurus dorsalis

Desert Iguana

Sauromalus ater

Chuckwalla

PHRYNOSOMATIDAE

Callisaurus draconoides

Zebra-tailed Lizard

Petrosaurus mearnsi

Banded Rock Lizard

Phrynosoma blainvillii
Phrynosoma douglassi
Phrynosoma mcallii

Coast Horned Lizard
Pigmy Short-horned Lizard
Flat-tailed Horned Lizard

Phrynosoma platyrhinos calidiarum
Phrynosoma platyrhinos platyrhinos

Southern Desert Horned Lizard
Northern Desert Horned Lizard

Sceloporus graciosus gracilis
Sceloporus graciosus graciosus
Sceloporus graciosus vandenburgianus
Sceloporus magister uniformis
Sceloporus magister transversus
Sceloporus occidentalis becki
Sceloporus occidentalis biseriatus
Sceloporus occidentalis bocourtii
Sceloporus occidentalis longipes
Sceloporus occidentalis occidentalis
Sceloporus occidentalis taylori
Sceloporus orcutti

Western Sagebrush Lizard
Northern Sagebrush Lizard
Southern Sagebrush Lizard
Yellow-backed Desert Spiny Lizard
Barred Desert Spiny Lizard
Island Fence Lizard
San Joaquin Fence Lizard
Coast Range Fence Lizard
Great Basin Fence Lizard
Northwestern Fence Lizard
Sierra Fence Lizard
Granite Spiny Lizard

Uma inornata
Uma notata
Uma scoparia

Coachella Valley Fringe-toed Lizard
Colorado Desert Fringe-toed Lizard
Mojave Fringe-toed Lizard

Urosaurus graciosus
Urosaurus nigricaudus
Urosaurus ornatus

Long-tailed Brush Lizard
Baja California Brush Lizard
Ornate Tree Lizard

Uta stansburiana elegans
Uta stansburiana nevadensis
Uta stansburiana stansburiana

Western Common Side-blotched Lizard
Nevada Common Side-blotched Lizard
Northern Common Side-blotched Lizard

SCINCIDAE

Plestiodon gilberti
Plestiodon skiltonianus skiltonianus
Plestiodon skiltonianus interparietalis

Gilbert's Skink
Western Skink
Coronado Skink

TEIIDAE

Aspidoscelis hyperythra
Aspidoscelis tigris munda
Aspidoscelis tigris stejnegeri
Aspidoscelis tigris tigris

Orange-throated Whiptail
California Whiptail
Coastal Whiptail
Great Basin Whiptail

XANTUSIIDAE

Xantusia gracilis
Xantusia henshawi
Xantusia riversiana

Sandstone Night Lizard
Henshaw's Night Lizard
Island Night Lizard

Xantusia vigilis sierrae
Xantusia vigilis vigilis
Xantusia wigginsi
Xantusia sp. "Yucca Valley"
Xantusia sp. "San Jacinto"

Sierra Night Lizard
Desert Night Lizard
Baja California Night Lizard
Yucca Valley Night Lizard
San Jacinto Night Lizard

SQUAMATA - SNAKES

BOIDAE

Charina bottae bottae
Charina bottae umbratica

Rubber Boa
Southern Rubber Boa

Lichanura orcutti

California Rosy Boa

COLUBRIDAE

Arizona elegans candida
Arizona elegans eburnata
Arizona elegans occidentalis

Mojave Glossy Snake
Desert Glossy Snake
California Glossy Snake

Bogertophis rosaliae

Baja California Rat Snake

Chionactis occipitalis annulata
Chionactis occipitalis occipitalis
Chionactis occipitalis talpina

Colorado Shovel-nosed Snake
Mojave Shovel-nosed Snake
Nevada Shovel-nosed Snake

Coluber constrictor mormon

Western Yellow-bellied Racer

Contia longicaudae
Contia tenuis

Forest Sharp-tailed Snake
Common Sharp-tailed Snake

Diadophis punctatus "Coastal CA"
Diadophis punctatus "Eastern CA"
Diadophis punctatus "Southern CA"
Diadophis punctatus "Great Basin"
Diadophis punctatus regalis

Ring-necked Snake
Ring-necked Snake
Ring-necked Snake
Ring-necked Snake
Ring-necked Snake

Hypsiglena chlorophaea
Hypsiglena ochrorhyncha klauberi
Hypsiglena ochrorhyncha nuchulata

Northern Desert Night Snake
San Diego Night Snake
California Night Snake

Lampropeltis californiae
Lampropeltis zonata "Coastal Clade"

Common Kingsnake
California Mountain Kingsnake

<i>Lampropeltis zonata "Northeastern Clade"</i>	California Mountain Kingsnake
<i>Lampropeltis zonata "Southern Clade"</i>	California Mountain Kingsnake
<i>Masticophis flagellum piceus</i>	Red Coachwhip
<i>Masticophis flagellum ruddocki</i>	San Joaquin Coachwhip
<i>Masticophis fuliginosus</i>	Baja California Coachwhip
<i>Masticophis lateralis euryxanthus</i>	Alameda Striped Racer
<i>Masticophis lateralis lateralis</i>	California Striped Racer
<i>Masticophis taeniatus</i>	Striped Whipsnake
<i>Phyllorhynchus decurtatus</i>	Spotted Leaf-nosed Snake
<i>Pituophis catenifer affinis</i>	Sonoran Gopher Snake
<i>Pituophis catenifer annectens</i>	San Diego Gopher Snake
<i>Pituophis catenifer catenifer</i>	Pacific Gopher Snake
<i>Pituophis catenifer deserticola</i>	Great Basin Gopher Snake
<i>Pituophis catenifer pumilis</i>	Santa Cruz Island Gopher Snake
<i>Rhinocheilus lecontei</i>	Long-nosed Snake
<i>Salvadora hexalepis hexalepis</i>	Desert Patch-nosed Snake
<i>Salvadora hexalepis mojavensis</i>	Mojave Patch-nosed Snake
<i>Salvadora hexalepis virgulata</i>	Coast Patch-nosed Snake
<i>Sonora semiannulata</i>	Western Ground Snake
<i>Tantilla hobartsmithi</i>	Southwestern Black-headed Snake
<i>Tantilla planiceps</i>	California Black-headed Snake
<i>Thamnophis atratus atratus</i>	Santa Cruz Aquatic Garter Snake
<i>Thamnophis atratus hydrophilus</i>	Oregon Aquatic Garter Snake
<i>Thamnophis atratus zaxanthus</i>	Diable Range Aquatic Garter Snake
<i>Thamnophis couchii</i>	Sierra (Western Aquatic) Garter Snake
<i>Thamnophis elegans elegans</i>	Mountain Terrestrial Garter Snake
<i>Thamnophis elegans terrestris</i>	Coast Terrestrial Garter Snake
<i>Thamnophis elegans vagrans</i>	Wandering Terrestrial Garter Snake
<i>Thamnophis gigas</i>	Giant Garter Snake
<i>Thamnophis hammondi</i>	Two-striped Garter Snake
<i>Thamnophis marcianus</i>	Checkered Garter Snake
<i>Thamnophis ordinoides</i>	Northwestern Garter Snake
<i>Thamnophis sirtalis fitchi</i>	Valley Garter Snake
<i>Thamnophis sirtalis infernalis</i>	California Red-sided Garter Snake
<i>Thamnophis sirtalis tetrataenia</i>	San Francisco Gartersnake

Thamnophis sirtalis sp.

South Coast Garter Snake

Trimorphodon lambda

Sonoran Lyre Snake

Trimorphodon lyrophanes

Peninsular Lyre Snake

LEPTOTYPHLOPIDAE

Leptotyphlops humilis humilis

Southwestern Blind Snake

Leptotyphlops humilis californica

Desert Blindsnake

VIPERIDAE

Crotalus atrox

Western Diamond-backed Rattlesnake

Crotalus cerastes cerastes

Mojave Desert Sidewinder

Crotalus cerastes laterorepens

Colorado Desert Sidewinder

Crotalus mitchellii

Speckled Rattlesnake

Crotalus oreganus helleri

Southern Pacific Rattlesnake

Crotalus oreganus lutosus

Great Basin Rattlesnake

Crotalus oreganus oreganus

Northern Pacific Rattlesnake

Crotalus ruber

Red Diamond Rattlesnake

Crotalus scutulatus

Northern Mojave Rattlesnake

Crotalus stephensi

Panamint Rattlesnake

Table 2

Taxon	Highest Relevant Ranking Status	PARCA Criteria	Total Area of Distribution	Required Size of PARCA designation
<i>Ambystoma californiense</i>	Threatened - USFWS	2	60,792	6,079
<i>Ambystoma californiense</i> "Santa Barbara"	Endangered - USFWS	2	755	76
<i>Ambystoma californiense</i> "Sonoma"	Endangered - USFWS	2	223	22
<i>Ambystoma macrodactylum croceum</i>	Endangered - USFWS	2	103	10
<i>Aneides ferreus</i>	NatureServe-G3	2	4,381	438
<i>Anniella pulchra</i>	NatureServe-G3G4	2	121,664	12,166
<i>Batrachoseps campii</i>	IUCN - Endangered	2	578	58
<i>Batrachoseps diabolicus</i>	NatureServe-G2	2	5,548	555
<i>Batrachoseps gabrieli</i>	NatureServe-G2	2	1,510	151
<i>Batrachoseps gregarius</i>	NatureServe-G2G3	2	8,720	872
<i>Batrachoseps incognitus</i>	NatureServe-G2G3	2	726	73
<i>Batrachoseps kawia</i>	NatureServe-G1G2	2	754	75
<i>Batrachoseps luciae</i>	NatureServe-G2G3	2	5,134	513
<i>Batrachoseps major aridus</i>	Endangered - USFWS	2	96	10
<i>Batrachoseps minor</i>	NatureServe-G1G2	2	146	15
<i>Batrachoseps regius</i>	NatureServe-G1	2	6,325	632
<i>Batrachoseps relictus</i>	NatureServe-G2	2	492	49
<i>Batrachoseps robustus</i>	NatureServe-G2	2	2,960	296
<i>Batrachoseps simatus</i>	NatureServe-G2	2	773	77
<i>Batrachoseps stebbinsi</i>	USFWS - Candidate	2	1,329	133
<i>Bufo californicus</i>	USFWS-Endangered	2	31,750	3,175
<i>Bufo canorus</i>	USFWS-Candidate	2	8,320	832
<i>Bufo exsul</i>	NatureServe-G1Q	2	309	31
<i>Charina bottae umbratica</i>	NatureServe-G2G3	2	2,159	216
<i>Dicamptodon ensatus</i>	NatureServe-G3	2	11,370	1,137
<i>Elgaria panamintina</i>	NatureServe-G2G3	2	10,845	1,085

<i>Emys marmorata</i>	NatureServe-G3G4	2	265,202	26,520
<i>Gambelia sila</i>	USFWS-Endangered	2	12,540	1,254
<i>Gopherus agassizii</i>	USFWS-Threatened	2	85,916	8,592
<i>Hydromantes brunus</i>	NatureServe-G1	2	381	38
<i>Hydromantes shastae</i>	NatureServe-G1G2	2	1,583	158
<i>Masticophis lateralis euryxanthus</i>	USFWS-Threatened	2	3,025	303
<i>Phrynosoma blainvilli</i>	NatureServe-G3G4	2	113,424	11,342
<i>Phrynosoma mcallii</i>	NatureServe-G3	2	8,276	828
<i>Plethodon asupak</i>	NatureServe-G1G2	2	525	52
<i>Plethodon stormi</i>	IUCN - Endangered	2	323	32
<i>Rana boylei</i>	NatureServe-G3	2	120,389	12,039
<i>Rana cascadae</i>	NatureServe-G3G4	2	7,963	796
<i>Rana draytonii</i>	USFWS-Threatened	2	133,206	13,321
<i>Rana muscosa</i>	USFWS-Endangered	2	13,364	1,336
<i>Rana pretiosa</i>	USFWS-Candidate	2	2,509	251
<i>Rana sierrae</i>	USFWS-Candidate	2	27,093	2,709
<i>Rhyacotriton variegatus</i>	NatureServe- G3G4	2	18,487	1,849
<i>Spea hammondi</i>	NatureServe-G3	2	101,157	10,116
<i>Thamnophis gigas</i>	USFWS-Threatened	2	24,961	2,496
<i>Thamnophis sirtalis tetrataenia</i>	USFWS-Endangered	2	1,231	123
<i>Uma inornata</i>	USFWS-Threatened	2	1,606	161
<i>Uma notata</i>	NatureServe-G3	2	9,160	916
<i>Uma scoparia</i>	NatureServe-G3G4	2	34,471	3,447
<i>Xantusia gracilis</i>	NatureServe-G1	2	28	3
<i>Xantusia riversiana</i>	NatureServe-G1	2	207	21
<i>Ascaphus truei</i>	NatureServe-S2S3	3	39,464	7,893
<i>Aspidoscelis hyperythra</i>	NatureServe-S2	3	11,030	2,206
<i>Aspidoscelis tigris stejnegeri</i>	NatureServe-S2S3	3	25,648	5,130
<i>Batrachoseps pacificus</i>	NatureServe-S2	3	507	101
<i>Coleonyx switaki</i>	NatureServe-S1	3	1,646	329
<i>Coleonyx variegatus abbotti</i>	NatureServe-S2S3	3	5,712	1,142

<i>Crotalus ruber</i>	NatureServe-S2	3	22,751	4,550
<i>Diadophis punctatus "Southern CA"</i>	NatureServe-S2	3	18,510	3,702
<i>Ensatina eschscholtzii croceater</i>	NatureServe- S2S3	3	5,489	1,098
<i>Ensatina eschscholtzii klauberi</i>	NatureServe- S2S3	3	7,840	1,568
<i>Heloderma suspectum cinctum</i>	NatureServe-S1	3	7,698	1,540
<i>Lampropeltis zonata "Southern" Clade</i>	NatureServe-S1S2	3	6,764	1,353
<i>Masticophis flagellum ruddocki</i>	NatureServe-S2	3	50,419	10,084
<i>Pituophis catenifer pumilis</i>	NatureServe-S1	3	465	93
<i>Plestiodon skiltonianus interparietalis</i>	NatureServe-S1S2	3	16,123	3,225
<i>Rana aurora</i>	NatureServe-S2	3	8,529	1,706
<i>Salvadora hexalepis virgultea</i>	NatureServe-S2S3	3	33,679	6,736
<i>Scaphiopus couchii</i>	NatureServe-S2S3	3	8,596	1,719
<i>Thamnophis hammondi</i>	NatureServe-S2	3	63,970	12,794
<i>Thamnophis sirtalis "South Coast"</i>	NatureServe-S1S2	3	22,154	4,431
<i>Xantusia vigilis sierrae</i>	NatureServe-S1	3	936	187
<i>Ambystoma macrodactylum sigillatum</i>	CDFG-SSC	4	19,484	5,845
<i>Aneides flavipunctatus niger</i>	CDFG-SSC	4	2,170	651
<i>Arizona elegans occidentalis</i>	CDFG-SSC	4	50,754	15,226
<i>Bufo alvarius</i>	CDFG-SSC	4	475	142
<i>Diadophis punctatus "Great Basin"</i>	CDFG-SSC	4	2,956	887
<i>Gambelia copeii</i>	CDFG-SSC	4	192	58
<i>Hydromantes platycephalus</i>	CDFG-Special Animal	4	15,316	4,595
<i>Kinosternon sonoriense</i>	CDFG-SSC	4	214	64
<i>Lichanura orcutti</i>	CDFG-Special Animal	4	97,142	29,143
<i>Masticophis fuliginosus</i>	CDFG-SSC	4	1,021	306
<i>Plethodon elongatus</i>	CDFG-Special Animal	4	8,326	2,498
<i>Sceloporus graciosus graciosus</i>	CDFG-Special Animal	4	30,900	9,270
<i>Taricha rivularis</i>	CDFG-SSC	4	10,861	3,258
<i>Taricha torosa - southern range</i>	CDFG-SSC	4	14,915	4,475