



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

## 1.1 General Information

<b>Agency or State Entity Name:</b>	California Department of Fish and Wildlife (CDFW)
<b>Organization Code:</b>	3600
<b>Proposal Name:</b>	<b>Master Observation Database System (MODS):</b> Provide the California Natural Diversity Database (CNDDDB) program with the ability to capture, store, enable updates to, and retrieval and usage of, and preserve, all special status species observation data; including all details, as/however received or input, in/as individual records, in a single database repository.
<b>Proposal Description:</b>	California Department of Fish and Wildlife (CDFW) proposes to build and maintain a new Master Observation Database System (MODS) that will provide the California Natural Diversity Database (CNDDDB) program with the ability to capture, store, enable updates to, and retrieval and usage of, and preserve, all special status species observation data; including all details, as/however received or input, in/as individual records, in a single database repository. And will replace the decades-old suite of applications and data stores that exist now for CNDDDB, the California Natural Diversity Database. MODS will use one database to house all species data, including all details, as individual observation records. This data will be available to stakeholders. The "system" will include associated capture, storage, retrieval, update and reporting capabilities. The additional data that staff create during processing, such as spatial location "points," will be preserved for later use. In addition to summary information, Element Occurrences (EOs, the core product delivered by CNDDDB) will retain individual observation records, enabling temporal views of observation details. MODS provides a toolset to help resolve a current multi-year backlog of approximately 100,000 submitted observations that have not been processed by CNDDDB staff and are therefore not yet available to stakeholders.
<b>When do you want to start this project?:</b>	7/1/2021
<b>Department of Technology Project Number:</b>	3600-078

## 1.2 Submittal Information

<b>Contact Information:</b>	
Contact First Name	Contact Last Name
Beth	Jackson
Contact Email	Contact Phone Number
Beth.jackson@wildlife.ca.gov	916-995-2105
<b>Submission Date:</b>	12/17/2020
<b>Version Number:</b>	0.1



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

## Project Approval Executive Transmittal

**Attachment:** Include the Project Approval Executive Transmittal as an attachment to your email submission.

## 1.3 Business Sponsorship

### Executive Sponsors

Title	First Name	Last Name	Business Program Area
Deputy Directory	Tom	Lupo	Data Technology Division

Select + to add additional Executive Sponsors

### Business Owners

Title	First Name	Last Name	Business Program Area
Sr. Environmental Scientist	Misty	Nelson	CNDDDB

Select + to add additional Business Owners

### Program Background and Context

California Fish and Game Code 1932 (a) requires that the department (CDFW) shall “Obtain access to the most recent information with respect to natural resources. In order to accomplish this, the department shall maintain, expand, and keep current a data management system, designated the California Natural Diversity Data Base (CNDDDB), designed to document information on these resources. That data shall be made available to interested parties on request.”

Within CDFW the Biogeographic Data Branch (BDB) performs a leadership, policy and standards setting role for biological and geographic data management activities for the entire Department, its contractors, and partner organizations. The mission of CDFW's Biogeographic Data Branch is to collaborate with others to collect, manage, analyze, and distribute biogeographic data for effective conservation and management of California's natural resources.

BDB provides Geographic Information System (GIS) support for all CDFW branches. This organizational structure facilitates inter-branch teamwork and GIS workload balancing as changing conditions warrant.

BDB manages biological data development programs that are especially dependent and closely linked with GIS and emerging related technologies. These data development activities include vegetation mapping, special status species tracking, species range mapping, and tools for viewing and handling these data.

The CNDDDB is a "natural heritage program" and is part of an international and nationwide network of similar programs overseen by NatureServe (formerly part of The Nature Conservancy). In the early 1970's The Nature Conservancy created a program to catalog all information about populations of imperiled species in the United States. They designed a system using the most practical technology of the day and set up databases on a state-by-state basis. The CNDDDB staff in California played a key role in developing the methodology used by The Nature Conservancy; and in-turn leveraged this experience in creating the CNDDDB system.

The goal of the CNDDDB program is to provide the most current information available on the state's most imperiled elements of natural diversity and to provide tools to analyze these data.

Natural heritage programs provide location and natural history information on special status plants, animals, and natural communities to the public, other agencies, and conservation organizations. **Special status** plants and animals are those that have been determined by CDFW to be of conservation concern and include, but are not limited to, plants and animals officially listed as rare, threatened, or endangered under the California Endangered Species Act. The data



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

help drive informed conservation decisions, aid in the environmental review of projects and land use changes; and provide baseline data helpful in recovering special status species and for research projects.

There are around 2,400 special status plants (2,352 vascular plants and 57 non-vascular plant and lichens), and around 930 special status animals (500 vertebrates and 430 invertebrates) that the CNDDDB tracks in California.

The CNDDDB is also a database; among the largest, most comprehensive databases of its type in the world. Assembled over the past forty plus (40+) years this dataset presently contains over 99,000 site-specific records on California's rarest plants, animals, and natural communities. The database includes an inventory of the status and locations of special status plants and animals in California. In a typical year around 3,000 people collect and submit data to CNDDDB.

CNDDDB staff work with partners to maintain current lists of special status species, as well as to maintain an ever-growing database of GIS-mapped site-specific locations and occurrence records for these species. CNDDDB has both a GIS component as well as a text component (with habitat, population size, threats, etc.) and both are equally important.

The CNDDDB welcomes, from all sources, new observation information that documents special status species sites, as well as information that updates sites previously identified. While "observation" is the term used most often, it really means some type of detection of species presence, whether visual or not. Other examples would include hearing bird calls, DNA detection of an amphibian species from a creek water sample, or the uploading of historic plant collections and localities. Reports on repeat visits to sites that already exist in the CNDDDB are as important as documenting new sites in order to help the CNDDDB track trends in population, stand size and condition, habitat, threats, migration patterns, etc.

The CNDDDB program lacks an adequate method of managing and sharing spatial point location data. Data on special status plant and animal species is accepted in a variety of formats. The method of submission will likely depend on the amount of data that was collected, the means and format the data was collected in, and the type of project being carried out. For all data submissions, the more information that is provided to the CNDDDB on population size, site condition, habitat, threats, etc., the better the CNDDDB can assign an accurate occurrence rank to the site. The occurrence rank is then taken into consideration when determining rarity status and when prioritizing sites for conservation purposes.

Observation data for special status species are received via a variety of different channels. The data submitted by contributors is either explicit or descriptive. **Explicit** data is complete and includes specific x/y coordinate geospatial location information (e.g., longitude and latitude), and species information for each observation. **Descriptive** data is just as the word indicates. A location for an observation might be the street address, which is descriptive of the location, and will, in turn, need to be converted into specific coordinate location information. Another example for descriptive data about the species and where it is observed might come from a journal article: "During the breeding season the <species> stay in close proximity to one another, but once breeding is complete, they often range up to 3 miles apart from one another...".

The preferred channel is for submitters to use the Online Field Survey Form (OFSF) web application, as it automatically assigns a source code for tracking and populates the Field Survey Form (FSF) database<sup>1</sup>. The OFSF provides *explicit* data

---

<sup>1</sup> 7,116 FSF were submitted in 2019. Of these 67% were OFSF. Of the OFSF submitted 64% were entered by the contributor and 36% were data entered by BDB support staff. FSF were 56% of total sources in 2019. FSF's include explicit location information at least 99% of the time.



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

and meets the original design objectives of providing an online input capability, enabling online capture of one (1) species and one (1) observation per OFSF, along with the desired quantity and quality of associated data about the observation. The OFSF is intended to be used for a small number of observations, generally no more than ten (10). Fields for specific GIS-mapped (e.g., latitude and longitude) spatial location information are included on the form and retained in the FSF database when the OFSF is submitted online.

In almost 100% of field surveys conducted it is highly likely that the contributors utilize their own collection and recording methods and tools; and later transcribe the data to a PDF (paper) version of the FSF to capture observation information out in the field. The PDF version of the form is most often printed and emailed as an attachment; or sent via the U.S. Mail as a hard copy.

- Support staff for zoology observations then use the OFSF web application to enter the observation information into the FSF database. (in 2019 1,722 of 4,767 or 36% of OFSF submissions were by CNDDDB staff) Many times the submitter includes multiple species and/or observations on the same PDF form. When of a manageable number, these are then split out into one (1) species and one (1) observation per OFSF entry. Each PDF paper form has space for only one set of specific spatial coordinates so when multiple species and observations are submitted on the same PDF paper form, the location information is very often *descriptive*.
- Botany staff follow a different process and do not create OFSF entries for PDF versions of the FSF that are submitted.

The CNDDDB accepts digital data in a variety of formats including Geographic Information System (GIS) shapefiles (lines, points, polygons), database Format (DBF) files, Microsoft Access databases, or tabular formats (such as Excel tables). A File Transfer Protocol (FTP) site is available for the data transfer of zip files or Microsoft Access databases attached to emails. Observations are frequently submitted via emails sent to CDFW, most with attachments containing multiple species and multiple observations in spreadsheets, reports, tables, Access database files, Articles and other publications, etc.

Contributors often send several species and several observations to CDFW as one submission. There is no bulk data entry capability currently available in CNDDDB. Ideally a preferred file format and submission protocol can be provided to contributors at the point of origin, to reduce the data entry impact within CDFW and speed the flow of information.

A CNDDDB forms VB.net application is used by BDB support staff to capture metadata and assign a source code. The VB.net application and process method is also used for observation information received via U.S. Mail and other non-digital channels.

The CNDDDB will also accept reports as a form of data submission. Reports are best submitted in conjunction with field survey forms or digital data to provide context for the surveys performed. However, the CNDDDB will accept reports as the sole form of data submission as long as they contain location information on the special status species observed (maps or coordinates) and some additional information about those observations (such as date observed and number of individuals).

Currently, the CNDDDB's primary method of maintaining special status species observation data is in the form of **Element Occurrences** (EOs). When CNDDDB was created in the 1970's the nationwide spatial dataset at the time were the USGS 7.5 minute paper topographic maps. For California there are 2869 of these maps. The number of special status species in California made it impractical and too expensive to purchase, mark and store these maps by species; so multiple



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

species, and often multiple observations for a species, were mapped together on the same paper USGS 7.5 minute paper topographic map.

The paper maps were originally marked with locations of special status species using small round sticker dots and pencil notations. Because of this there was no practical way in the 1970's to draw marks for many detections of many species on a single paper map and end up with a legible result.

The solution employed was to create a database of EOs, where one to many sources for a species in the same vicinity would be combined into individual map features. It took time to sift through all the raw data to assemble an EO, and some details within the raw data were lost in this process, but overall it was adequate for the time.

With the development of personal computers and distributed processing, GIS software, and the internet, the CNDDDB evolved from a system of paper maps and filing cabinets, to a GIS system with an online presence. However, the EO construct based on paper maps, was kept with all its shortcomings.

In the CNDDDB "system" today BDB biologists and support staff, working from a wide variety of data sources, follow a rigorous process utilizing several applications and requiring significant effort, to create EOs for given species observed at a precise spatial location, including both tabular and geospatial data. The location data is **mapped** into a polygon. Support staff and scientists are required to pull paper documents; to retrieve scanned documents stored digitally in a Network Share drive (ContribData); to access reference websites for species information; to access the FSF database and/or CNDDDB database for observation data; to use ArcMap to define polygons; and to use other sources as required, making this a complex multi-faceted process.

EOs can be generated from a single observation; or may include a **summary** record of numerous observations, captured over time. Using multiple applications, the observations and subsequent EOs are housed in one of the database tables, digital files, network share folders, and physical file cabinets that comprise the CNDDDB data framework.

BDB support staff require about one (1) month of training and job experience before they can become proficient with the data entry process. The BDB biologists responsible for creating the EOs generally require about nine (9) months of training and job experience before they are proficient in the process. Creation of EOs take about 3 hours<sup>2</sup> for a single species observation submitted via the OFSF but increases significantly as the amount and complexity of data increases. The Quality Control (QC) process currently can consume the same amount of time.

Because accuracy of the resultant EO data is critical to conservation and eco management decision making; following creation or updating of the EO, a Quality Control (QC) process is applied adhering to the same scientific rigor. The QC process involves a secondary CNDDDB biologist reviewing all data used by a primary CNDDDB biologist, to create an EO record. Currently there is no stored data layer to help with QC; specifically, staff use and/or create spatial points during the process of constructing EOs, but have no tools available to relay the created points to the QC process - making QC more time consuming.

Once a data record is established in the FSF/CNDDDB databases there is no application to facilitate editing the record. A database manager must make any requisite changes via direct table updates within the FSF/CNDDDB databases. Of necessity, due to resource constraints, edits are currently kept to a bare minimum.

---

<sup>2</sup> Based on 2019-2020 Service Based Budget; Task name: Collate & Map Rare Species Data. Yearly mission task hour requirement = 41,160



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

Over a period of several years a backlog has developed of sources/observations that have not completed the EO process. These number approximately 100,000 observation records. Zoology currently has about twenty (20) years of backlog data waiting to be mapped into EOs. Botany has a much smaller backlog, but only because botanists do not currently map plants with a Rare Plant rank of 3 or 4. The rarity ranking of plant special status species is a thoughtful process, one that CNDDDB works with the California Native Plant Society to create and maintain. Rarity ranks are established based on EOs, not individual observations. NatureServe also has a rarity rank system from 1 to 5; and CNDDDB contributes to the maintenance of this as well.

Metadata for some of these records has been collected and they have been assigned a *source code* for tracking. Depending on the source information type, these backlogged records may, or may not have been entered into CNDDDB in an unprocessed status that does not include precise location information. In the current state the continuing number of new observations submitted ensures that the backlog cannot be cleared without substantial investment of time and resources; complicated by the amount of training and job experience required to become proficient in processing. Even should this effort be initiated and successfully completed; without changes to the current process and systems tools, another backlog would soon manifest. Conservation, land use decisioning and other stakeholders use of the EO data suffers from this unprocessed backlog of data.

As a stop-gap, for those observations entered in an unprocessed status, the existing framework maintains location information at a very generalized level (*county* and United States Geological Survey (USGS) 7.5-minute *quadrangle*); this even though the majority of time the observation is submitted with precise latitude and longitude coordinates spatial location information.

Missing in CNDDDB today are features to capture, store, update and share *raw data details* at an individual observation level, that can then be made available to stakeholders in a timely manner. Although generalized metadata information for unprocessed data is made available, being able to provide precise location information to subscribers would be more immediately useful and informative. Currently, stakeholders must wait until submitted observations of special status species are processed and spatially mapped by CNDDDB staff into an EO record before the data, with precise<sup>3</sup> spatial location information, is available for their use. Careful consideration to how this information is subsequently displayed to viewers will be critical; to ensure the data is clearly understood to be preliminary to completion of the EO and EO/QC processes. Additionally, flexibility in process between botany and zoology is requisite.

A subset of observations that are submitted are considered less essential to process as EOs, but they do still merit capture and inclusion in the CNDDDB and/or access portals (Rarefind, BIOS, QuickView); a capability that does not currently exist. Examples of this would include observations submitted for foraging birds, species observed in migration corridors, California Rare Plant Rank 3 and 4 special status taxa, etc. The CNDDDB program currently has tens of thousands of records for the rare plant rank 3 and 4 special status taxa. These have only been captured as quad and/or county records. The Master Observation database is an ideal place to store these records spatially.

Once collected CNDDDB data are available in a variety of ways. Access to detailed information is by subscription only.

- a. For subscribers, the CNDDDB *tabular* data can be accessed via **RareFind**, which allows for complex querying and reporting by subscribers. RareFind 5 is an Internet-based application that eliminates the need for the user to

---

<sup>3</sup> Precise coordinates available if observation submitted using OFSF, otherwise only the polygon, or county/quad level information is available.





# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

download updated data every month. Stakeholders using RareFind have access to more details about an EO - e.g., habitat, threats, number of species detected, etc. - over time.

- b. For subscribers, the CNDDDB spatial data can be downloaded as a shapefile (lines, points, polygons) or accessed via the **BIOS** Data Viewer. This Internet-based map viewer stores and allows interaction with explicit data; quickly and easily displaying element occurrence (EO) information on a map background, in a web browser. The BIOS Data Viewer also has some limited reporting and querying capabilities. Non-subscribers using **BIOS** are not allowed access to secure layers of explicit data.
- c. Other products include PDF maps representing standard USGS 7.5' maps and depicting the graphical information with a legend, and printed text reports which complement the PDF maps.
- d. Also provided is the free, publicly accessible web based CNDDDB **QuickView** Tool which shows information only to the 7.5' quadrangle or county level. The QuickView Tool will generate a list of special status taxa for a given area, but no details.

Data is made available to these portals the first Tuesday of each month.

## 1.4 Stakeholders

### Key Stakeholders

Org. Name	Name
Wildlife Branch	Scott Gardner, Branch Chief
Internal or External?	<input checked="" type="checkbox"/> Internal <input type="checkbox"/> External

### When is the Stakeholder impacted?

Input to Business Process	During the Business Process	Output of the Business Process
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### How are Stakeholders impacted?

Wildlife Branch issues Scientific Collecting Permits (SCP). When applying for an SCP renewal permit holders are required to report what they collected or captured under the terms of their prior permit. They are not required to submit species they observe; just what they collect, capture or handle. CNDDDB considers each collect, capture or handle event to be an observation event (AKA a detection). After implementation of new solutions the permit holders will be required to use the new tools and processes.

### How will the Stakeholders participate in the project?

Wildlife Branch stakeholders will not directly participate in the requirements definition, design, building, testing and implementation of a solution but will be included in a review capacity and will benefit from completion of a successful project in several ways: 1) a successful project will result in contributors of observations source data having more immediate access to their input; not the case currently, as data often does not appear for years. 2) a successful project should result in reduced impact from contributors contact questions or resubmissions of the same observations. 3) a successful project will result in entities who make use of the observations source data for various reasons receiving more complete data for their project areas, facilitating better species conservation and land use project decision making.

Org. Name	Name
Data and Technology Division (DTD)	Tom Lupo
Information Technology Systems Branch (ITSB)	Stephen Adams
Biogeographic Data Branch (BDB)	Misty Nelson, Steve Goldman
- <b>Zoology Data Manager</b>	- Brian Acord
- <b>Botany Data Manager</b>	- Kristi Lazar



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

<ul style="list-style-type: none"> <li>- <b>Spotted Owl Data Manager</b></li> <li>- <b>Timberland Species Data Manager</b></li> <li>- <b>GIS/vb.net application Manager</b></li> </ul>		<ul style="list-style-type: none"> <li>- Kate Keiser</li> <li>- Ryan Elliot</li> <li>- Joe Vondracek</li> <li>- Craig Schjoneman</li> </ul>	
Information Technology Operations Branch (ITOB) IT Governance & Support Branch (ITG&SB)		<ul style="list-style-type: none"> <li>- Beth Jackson</li> </ul>	
<b>Internal or External?</b>		<input checked="" type="checkbox"/> Internal <input type="checkbox"/> External	
<b>When is the Stakeholder impacted?</b>			
Input to Business Process		During the Business Process	Output of the Business Process
<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<b>How are Stakeholders impacted?</b>			
MODS application tools and database will reside on DTD servers; DTD staff will provide resources to successfully build the access interface, database and output and reporting tools; DTD will provide staff resources to maintain these after they are completed. DTD staff resources will make use of the MODS during processing, data modelling, conservation practices, etc.			
<b>How will the Stakeholders participate in the project?</b>			
DTD staff will help create the Stage 2 Alternative2 Analysis (S2AA) document and subsequent project approval documents; DTD staff will help create the documentation necessary to procure any external resources that may be required; DTD staff will manage the project; DTD staff will manage external resources to and/or will themselves build and install the MODS components; DTD staff will maintain these after they are completed. A successful project will include process efficiencies for BDB staff entering observations data, creating EOs, completing QC and managing interactions with public contributors and consumers of special status species observation data.			
<b>Org. Name</b>		<b>Name</b>	
All contributors to and consumers of the data: <ul style="list-style-type: none"> <li>- Paid/un-paid Subscribers to the data</li> <li>- State Divisions, Departments and Branches</li> <li>- Government agencies: federal, state, county, city</li> <li>- Scientific organizations</li> <li>- Partner organizations</li> <li>- Non-profits</li> <li>- General users of the data</li> </ul>		<ul style="list-style-type: none"> <li>- <b>NatureServe</b> - a non-profit conservation organization managing an international network of natural heritage programs. NatureServe provides observation data and mapping standards.</li> <li>- <b>California Native Plant Society (CNPS)</b> – a non-profit dedicated to conserving California native plants and their natural habitats.</li> <li>- <b>Calflora</b></li> <li>- <b>iNaturalist</b></li> <li>- <b>GBIF</b></li> <li>- <b>CWHR</b></li> <li>- <b>Scientists and researchers</b></li> <li>- <b>Regulatory environmental review agencies</b></li> <li>- <b>The Nature Conservancy (TNC)</b></li> <li>- <b>The Science Institute</b></li> <li>- <b>The Forest Service</b></li> <li>- <b>Timber Industry, Sierra Pacific Industries</b></li> <li>- <b>Ecosystem Conservation Division</b></li> <li>- <b>Wildlife &amp; Fisheries Division</b></li> <li>- <b>Conservation Analysis Unit</b> <ul style="list-style-type: none"> <li>o ACE</li> <li>o CWHR</li> </ul> </li> </ul>	
<b>Internal or External?</b>		<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External	
<b>When is the Stakeholder impacted?</b>			
Input to Business Process		During the Business Process	Output of the Business Process
<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>





# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

## How are Stakeholders impacted?

The needs of stakeholders are a primary driver behind this project. Creation of the MODS will provide an opportunity for stakeholders to be better informed of special status species observation data. Online data entry/submission tools and processes will incorporate design changes that incentivize contributors usage. The new database will facilitate more immediate stakeholder access to, and use of, the observations data in its raw form prior to it's inclusion within EOs and subsequent QC process.

## How will the Stakeholders participate in the project?

Outreach will be conducted to ensure understanding of stakeholder needs. Stakeholders will not participate directly in the requirements definition, design, building, testing and implementation of a solution but may be asked to comment on prototypes to ensure the solution set is meeting their needs. They will benefit from completion of a successful project in several ways: 1) a successful project will result in contributors of observations source data having more immediate access to their input; not the case currently, as data often does not appear for years. 2) a successful project should result in reduced impact from contributors contact questions or resubmissions of the same observations. 3) a successful project will result in those stakeholders who make use of the observations source data for various reasons, receiving more complete data for their project areas, facilitating better species conservation and land use project decision making.

Select + to add additional Stakeholders

## 1.5 Business Program

Org. Name	Name
CNDDDB Unit	Misty Nelson

### When is the unit impacted?

Input to the Business Process	During the Business Process	Output of the Business Process
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### How is the business program unit impacted?

They will be the most impacted with all process and program changes. Will need to provide input and accept new processes.

### How will the business program participate in the project?

The CNDDDB unit will be involved in all phases of this project in order for this project to be successful

Select + to add additional Business Programs

## 1.6 Business Alignment

### Business Driver(s)

#### Financial Benefit

Increased Revenue	Cost Savings	Cost Avoidance	Cost Recovery
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Mandate(s)

State	Federal
<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Improvement

Better Services to Citizens	Efficiencies to Program Operations	Improved Health and/or Human Safety	Technology Refresh
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### Security

Improved Information Security	Improved Business Continuity	Improved Technology Recovery	Technology End of Life
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

Strategic Business Alignment	
Strategic Plan Last Updated?	4/23/2012 CDFW Strategic Vision 5/1/1995 DFG Strategic Plan
Strategic Business Goal	Alignment
<i>CDFW Strategic Vision Core Value: Excellence</i> Department of Fish and Game (DFG)/Fish and Game Commission (F&GC) pursue quality, proactively assessing their performance and striving to continuously improve programs, services, and work products, as well as the efficiency and cost-effectiveness with which these are delivered. They employ credible science in their evaluations of programs and policies.	The successful project will deliver more data on special status species in a significantly more timely and process efficient manner; inspiring greater partner and public confidence.
Strategic Business Goal	Alignment
<i>CDFW Strategic Vision Goal 1: Strong relationships with other Agencies, Governments, Organizations and the Public</i> Objective 1: Increase stewardship awareness and participation by the public.	Identification of special status species locations and habitats across California relies in large part on observational input by the public. The successful project will provide more immediate feedback to contributors and incentivize them to continue providing observations input.
Strategic Business Goal	Alignment
<i>CDFW Strategic Vision Goal 2: Highly Valued programs and quality services</i> Objective 1: Protect, manage, enhance and restore wildlife resources	The first step in protecting special status species is to identify the locations of the species, the breeding areas and the supporting habitats. A successful project will facilitate achieving this goal to a much greater degree by: 1) capturing the backlog of submitted observations, and 2) providing data back to stakeholders more quickly.
Strategic Business Goal	Alignment
<i>CDFW Strategic Vision, Appendix A: Foundational Strategy Recommendation #3: Use "ecosystem-based" management informed by credible science</i> Make informed resource management decisions; e.g., manage ecosystems as a whole rather than individual species; when dealing with special status species take into account the effect on other species	A successful project will ensure more timely inclusion of submitted observation data (backlog and new) into the CNDDDB database; facilitating decision making with a more comprehensive view of species and habitat.
Strategic Business Goal	Alignment
<i>CDFW Strategic Vision, Appendix A: Mandates, Efficiencies and funding Recommendation #1:</i> Public support for DFG funding depends on ... a sense that funds are being used efficiently. It is important that the stable funding and efficiencies recommendations work in concert and be advanced together.	The successful project will increase public confidence in CNDDDB by demonstrating efficiencies in the capture and subsequent display of observations data (backlog and new); thus encouraging continued input.
Strategic Business Goal	Alignment
<i>CDFW Strategic Vision, Appendix A: Permitting Recommendations - ALL</i> The Permitting recommendations all speak to simplifying and streamlining the permitting process	The successful project will facilitate before and after measuring for resource management initiatives; including a more immediate and comprehensive data set of special status species observation data for a targeted project area.



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

<p>that often includes the taking of listed species. Too often beneficial habitat improvement projects are delayed or abandoned. Decision making relies on accurate, comprehensive and timely understanding of species spatial location, including supporting habitat.</p>	
<p><b>Strategic Business Goal</b></p>	<p><b>Alignment</b></p>
<p><i>CDFG Strategic Plan, May 1, 1995: Theme II: Cooperative Approaches to Resource Stewardship and Use: Goal 1-Strategy c: Emphasize projects that have measurable results and include ongoing multi-species habitat conservation planning and implementation efforts.</i></p>	<p>The successful project will facilitate before and after measuring for resource management initiatives; including a more immediate and comprehensive data set of special status species observation data for a targeted project area.</p>
<p><b>Strategic Business Goal</b></p>	<p><b>Alignment</b></p>
<p><i>CDFG Strategic Plan, May 1, 1995: Theme III: Manage Wildlife From a Broad Habitat Perspective: Goal 1-Strategy a: the Department will emphasize multi-species planning, analysis, and management ... Identify habitats at risk and set priorities for conservation planning and implementation. Strategy c. Develop adequate databases on wildlife communities to support conservation planning and ecosystem management</i></p>	<p>The successful project will provide a more comprehensive database of observation data to facilitate identification of at-risk species and habitats; and conservation planning and ecosystem management.</p>
<p><b>Strategic Business Goal</b></p>	<p><b>Alignment</b></p>
<p><i>CDFG Strategic Plan, May 1, 1995: Theme III: Manage Wildlife From a Broad Habitat Perspective: Goal 4-Strategy a: The Department will focus inventories, research, and resource assessment efforts on high priority habitats, species at risk, ... Identify key species and wildlife communities and increase efforts to collect baseline biological information on them. Coordinate this activity with our conservation planning efforts.</i></p>	<p>The successful project will provide significantly faster feedback of observations data back to stakeholders. This will encourage continued and likely increased collection and reporting of special status species observation data by the public to the Department. The increased database will facilitate the Department's allocation of future efforts and resources on key geographic areas of the State.</p>
<p><i>Select + to add additional Business Goals and Alignment</i></p>	
<p><b>Executive Summary of the Business Problem and/or Opportunity</b></p>	
<p>The Master Observation Database System (MODS) will establish a single data store for all observations, regardless of whether it is part of an Element Occurrence (EO; summary record of a population of organisms at a given location over time). This must be accomplished while preserving the value proposition BDB provides by creating EOs, each of which represents a mini environmental assessment. Establishing a single observation database is considered essential to the ongoing viability of the CNDDDB program. The current systems are, in some cases, over 40 years old and no longer meets the needs of the Department nor users.</p>	



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

Current problems and/or opportunities to be resolved include:

1. **Saving the details of the observation.** Preserve all observations, including all the *details* provided with the observation, as individual records (*this is foundational to CNDDDB's core mission*). Examples of details include specific spatial coordinates, location uncertainty qualifiers, species information, date, counts, percentages, ages; attributes like flowering, fruiting; animal behaviors like breeding, nesting, hunting; habitat description, site quality, surrounding land use, threats in the area, etc.
2. **Get data details they need back out to stakeholders faster.** Data *details* are not being turned around and made available for environmental review and other authorized stakeholder uses. Provide more immediate access for *authorized* stakeholders to all observation data; with all the details, including specific spatial coordinates, that were submitted, captured and stored in individual records, whether or not mapped. Provide the ability to indicate and obscure or filter or even remove<sup>4</sup> data for "sensitive" species. Provide this data to stakeholders in the ways it is useful to them. Do not facilitate non-BDB stakeholders attempting to create and store their own EOs. Provide more uses of the data by stakeholders such as, meeting different species analysis needs for which the EO model is less useful: species modeling, spatial-temporal analysis, etc. Data must be distinguished by the level of processing that has been applied such as pre-EO and post-EO, or pre-QC or post-QC processed observations. Provide tools for stakeholders to self-serve in requesting data. Store data in such a way to facilitate automated fulfillment of requests for authorized stakeholders.
3. **Package for EO.** Package the collected source information into a "folder" and queue it for EO processing. Incorporate data collected by the biologist, such as herbarium collections, into the folder.
4. **EO summaries lose detail.** Spatial location coordinates "points" created by biologists when creating EO polygons are not stored and must be recreated later in the QC process. Preserve previously processed, vetted and mapped observation data; making it available at a detail level, not just a summary level, during the QC process; and for other updates (e.g., adding staff notes) to EOs. When there are many data sources for a species which are close in proximity to one another, the details must currently be generalized<sup>5</sup> due to text field size and map feature limitations. Information will no longer need to be *regenerated* each time biologists work with the data, as it will be saved in a spatial manner with all its details in individual observation records; increasing efficiency and reducing EO and EO/QC processing times. This will also make data more transparent to stakeholders, providing more clarity as to what the data represents.
5. **Package for QC.** Package the completed EO, with all details that make up the EO (include points, not just a polygon) and the collected source information into a "folder" and queue it for subsequent QC processing.
6. **Variety of data input formats.** MODS will need to solve the problem of capturing observation information from a myriad of different data formats, providing common/standardized input methods and data field layouts, particularly for large data sets. Data entry currently consumes too much time and the training proficiency ramp up of 6-9 months precludes bringing in temporary staff during peak volume periods. Provide the ability to append/upload/batch import large datasets, including shapefiles (lines, points, polygons), spreadsheets and other databases. Work with a known set of contributors of large data sets to identify a standardized input file layout they'll utilize, to decrease the amount of human data entry.
7. **Simplify updates to EOs.** Updating an EO can currently only be done by a database manager manually accessing and changing tables within the database. Provide edit capability that is simple and that makes it easy to correct/undo throughout the process, to be used by authorized biologists and support staff. This will facilitate

<sup>4</sup> Removal would be in very isolated cases. Data would still be retained in the database; but unavailable to all but a few CDFW staff.

<sup>5</sup> Current field size limitations in the VB Occurrence Form force biologists to *summarize* which becomes time consuming and unwieldy as multiple observations are accumulated into a single EO over time.



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

- more accurate observation records. Review and correction during QC should be straightforward and easy to accomplish. Provide the ability to archive older versions, and track updates/changes to each record.
8. **Keep data interpretation.** Preserve the data interpretation already being done by biologists, for each observation within an EO.
  9. **Each observation saved as a time slice within an EO.** Preserve all individual observations records and details at a temporal level within EOs. An EO must have at least one observation, but may have many, which may occur over time that may extend to many years. These individual observation time slices must be preserved.
  10. **Links to sources.** Automate retrieval of source information from disparate stores like ContribData.
  11. **Not EO worthy - different treatment options.** Enable different treatment of lower ranked/priority species, such as not mapping them, though still making the records available to stakeholders in spatial format (other than Quad/County). Similarly, for submitted observation data that does not qualify for inclusion in an EO, for instance a bird sighted flying overhead, making the individual observation record details available in the same spatial format as it was submitted. Enable excluding these records from counts, such as “number in Backlog”, as they will not be processed and don’t represent future work.
  12. **Negative detection.** Capture and store *negative* detection<sup>6</sup> data. Provide the ability to map negative detection data.
  13. **Outdated database and applications.** Consolidate the number of system tools and datasets currently used to process and report data. This will help staff and stakeholders alike, making for less *digging around* to access systems, reduce training times, facilitate use of temporary staff to address seasonal volume spikes, accomplish tasks or locate data, and simplifying system maintenance. The current systems are, in some cases, over 40 years old. The application code was created by (a) contractor(s) who is/are long gone; it is not correctly annotated; nor is it documented. Establishing a single observation database is considered essential to the ongoing viability of the CNDDDB program.
  14. **Incentivizing contributors.** Create templates to facilitate and encourage contributors to submit most, if not all, of their observation data electronically, adhering to a standardized format for immediate import and system use, without the need for additional BDB data entry processing.
  15. **Service Based Budget (SBB).** Design data capture and storage in such a way that it facilitates automated reporting of SBB information. This will provide more consistency and efficiency in SBB reporting over time.
  16. Provide **automated queuing and workflow** tools to maximize processing efficiency. Observations will be automatically queued (or not queued) for EO analysis based on criteria. Maintain data that informs priorities so it can be used in automated queuing.
  17. Using **machine learning** to automate system processing where feasible. Examples might include identifying and flagging possible trends, queuing up plants/animals for rarity rank review after EO/QC processing, etc.
  18. **Reduce Backlog.** Resolve the backlog of data, collected over several years, that is pending processing (*approximately 100,000 submitted observations*). BDB’s main consumer data product is a set of EOs provided to stakeholders via the CNDDDB system. The amount of raw data received exceeds the capacity of current staff to process it all into EOs utilizing current tools and processes (*workload issue*). Implementation of the MODS solution will provide tools to increase BDB biologists and support staff productivity, enable use of temporary staff for functions such as data entry, etc.; all of which should contribute to more immediately whittling down the backlog, and precluding future buildup of backlog data.

<sup>6</sup> Negative detection is important in that it establishes a species was not found in an observation area. This can be significant in determining an increase in the threat to an imperiled species.



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

## Project Approval Lifecycle Completion and Project Execution Capacity Assessment

1. Does the proposal development or project execution anticipate sharing resources (state staff, vendors, consultants or financial) with other priorities within the Agency/state entity (projects, PALs, or programmatic/technology workload)?

Yes  No  Clear

2. Does the Agency/ state entity anticipate this proposal will result in the creation of new business processes or changes to existing business processes?

No  New Processes  Existing Processes  Both New and Existing  Clear

## 1.7 Project Management

Project Management Risk Score: 0.3

Attach completed Statewide Information Management Manual (SIMM) Section 45 Appendix A: Include the completed SIMM 45 Appendix A as an attachment to your

### Existing Data Governance and Data

<p>1. Does the Agency/state entity have an established data governance body with well-defined roles and responsibilities to support data governance activities? If an existing data governance org chart is used, please attach.</p>	<p><input type="radio"/> Unknown  <input checked="" type="radio"/> Yes  <input type="radio"/> No  <input type="radio"/> Clear</p>	<p>If applicable, include the data governance org chart as an attachment to your email submission.</p>
<p>2. Does the Agency/state entity have data governance policies (data policies, data standards, etc.) formally defined, documented, and implemented? If yes, please attach the existing data governance plan, policies or IT standards used.</p>	<p><input type="radio"/> Unknown  <input checked="" type="radio"/> Yes  <input type="radio"/> No  <input type="radio"/> Clear</p>	<p>If applicable, include the data governance policies as an attachment to your email submission.</p>
<p>3. Does the Agency/state entity have data security policies, standards, controls, and procedures formally defined, documented, and implemented? If yes, please attach the existing documented security policies, standards, and controls used.</p>	<p><input type="radio"/> Unknown  <input checked="" type="radio"/> Yes  <input type="radio"/> No  <input type="radio"/> Clear</p>	<p>If applicable, include the documented security policies, standards, and controls as an attachment to your email submission.</p>
<p>4. Does the Agency/state entity have user accessibility policies, standards, controls, and procedures formally defined, documented, and implemented? If yes, please attach the existing documented policies, accessibility governance plan, and standards used, or provide additional information below.</p>	<p><input type="radio"/> Unknown  <input checked="" type="radio"/> Yes  <input type="radio"/> No  <input type="radio"/> Clear</p>	<p>If applicable, include the documented accessibility policies, standards, and controls as an attachment to your email submission.</p>





# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

5. Do you have existing data that you are going to want to access in your new solution?	<input type="radio"/> Unknown <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Clear	If applicable, include the data migration plan as an attachment to your email submission.
6. If data migration is required, please rate the quality of the data.	Few issues identified with the existing data	

## 1.8 Criticality Assessment

<b>Business Criticality</b>					
Legislative Mandates:	N/A <input checked="" type="checkbox"/>				
Bill Number(s)/Code(s):					
Language that includes system relevant requirements:					
<b>Business Complexity Score</b>	1.1		Include the completed SIMM 45 Appendix C as an attachment to your email submission.		

**Noncompliance Issues**  
 Indicate if your current operations include noncompliance issues and provide a narrative explaining the how the business process is noncompliant.

Programmatic Regulations	HIPPA/CJIS/FTI/PII/PCI	Security	ADA	Other	N/A
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

1. What is the proposed project start date?	9/1/2021
2. Is this proposal anticipated to have high public visibility?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Clear
If "Yes," please identify the dynamics of the anticipated high visibility below:	
Multiple external stakeholders who contribute and use CNDDDB data.	
3. If there is an existing Privacy Information Assessment, include as an attachment to your email submission.	
4. Does this proposal affect business program staff located in multiple geographic	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Clear

If "Yes," provide an overview of the geographic dynamics below and enter the specific information in the space provided.

City	State	Number of Locations	Approximate Number of Staff

Select + to add Locations

## 1.9 Funding

1. Does the Agency/state entity anticipate requesting additional resources through a budget action to complete the project approval lifecycle?	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Clear
2. Will the state possibly incur a financial sanction or penalty if this proposal is not implemented? If yes, please identify the financial impact to the state below:	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Clear
3. Has the funding source(s) been identified for this proposal?	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Clear



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

FUNDING SOURCE		FUND AVAILABILITY DATE
General Fund	<input type="checkbox"/>	Date Picker
Special Fund	<input type="checkbox"/>	Date Picker
Federal Fund	<input type="checkbox"/>	Date Picker
Reimbursement	<input type="checkbox"/>	Date Picker
Bond Fund	<input type="checkbox"/>	Date Picker
Other Fund	<input type="checkbox"/>	Date Picker
If "Other Fund" is checked,		

## 1.10 Reportability Assessment

<p>1. Does the Agency/state entity's IT activity meet the definition of an IT Project found in the State administrative Manual (SAM) Section 4819.2? If "No," this initiative is not an IT project and is not required to complete the Project Approval Lifecycle.</p>	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Clear
<p>2. Does the activity meet the definition of Maintenance or Operations found in SAM Section 4819.2?  If "Yes," this initiative is not required to complete the Project Approval Lifecycle. Please report this workload on the Agency Portfolio Report. And provide an explanation below.</p>	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Clear
<p>3. Has the project/effort been previously approved and considered an ongoing IT  If "Yes," this initiative is not required to complete the Project Approval Lifecycle.</p>	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Clear
<p>4. Is the project directly associated with any of the following as defined by SAM Section 4812.32?  Single-function process-control systems; analog data collection devices, or telemetry systems; telecommunications equipment used exclusively for voice communications; Voice Over Internet Protocol (VOIP) phone systems; acquisition of printers, scanners and copiers.  If "Yes," this initiative is not required to complete the Project Approval Lifecycle. Please report this workload on the Agency Portfolio Report.</p>	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Clear
<p>5. Is the primary objective of the project to acquire desktop and mobile computing commodities as defined by SAM Section 4819.34, 4989?  If "Yes," this initiative is a non-reportable project. Approval of the Project Approval Lifecycle is delegated to the head of the state entity. Submit a copy of the completed, approved Stage 1 Business Analysis to the CDT and track the initiative on the Agency Portfolio Report.</p>	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Clear



# Stage 1 Business Analysis

California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

<p>6. Does the project meet all of the criteria for Commercial-off-the-Shelf (COTS) Software and Cloud Software-as-a-Services (SaaS) delegation as defined in SAM 4819.34, 4989.2 and SIMM 22</p> <p>If “Yes,” this initiative is a non-reportable project. Approval of the Project Approval Lifecycle is delegated to the head of the state entity; however, submit an approved SIMM Section 22 form to CDT.</p>	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Clear
<p>7. Will the project require a Budget Action to be completed?</p>	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Clear
<p>8. Is it anticipated that the project will exceed the delegated cost threshold assigned by CDT as identified in SIMM 10?</p>	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Clear
<p>9. Are there any previously imposed conditions place on the state entity or this project by the CDT (e.g., Corrective Action Plan)?</p> <p>If “Yes,” provide the details regarding the conditions below.</p>	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Clear
<p>10. Is the system specifically mandated by legislation?</p>	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Clear

## Department of Technology Use Only

Original “New Submission” Date	12/16/2020	
Form Received Date	12/17/2020	
Form Accepted Date	12/17/2020	
Form Status	Completed	
Form Status Date	12/17/2020	
Form Disposition	Approved	If “Other,” specify:
Form Disposition Date	12/17/2020	