DoD and the AKN: Who, What, Where, When , Why, and How

DoD Regional Training
August 29-31, 2023
Naval Base Kitsap-Bangor, WA

Sam Veloz
Dianne Miller

Elizabeth Neipert
Zoe Duran

John Alexander
Caitlyn Gillespie

Point Blue Conservation Science

ERDC ENGINEER RESEARCH & DEVELOPMENT CENTER

Klamath Bird Observatory

Photo: Heather Roskelley/Audubon Photography Awards

DoD and the AKN: Who, What, Where, When , Why, and How

DoD Regional Training
August 29-31, 2023
Naval Base Kitsap-Bangor, WA

Sam Veloz
Dianne Miller

Elizabeth Neipert
Zoe Duran

John Alexander
Caitlyn Gillespie

Point Blue Conservation Science

ERDC ENGINEER RESEARCH & DEVELOPMENT CENTER

Klamath Bird Observatory

AVIAN KNOWLEDGE NETWORK

pointblue.github.io/dod_workshop

Photo: Heather Roskelley/Audubon Photography Awards

WELCOME, INTRODUCTIONS, AND LOGISTICS

Who are **we**?

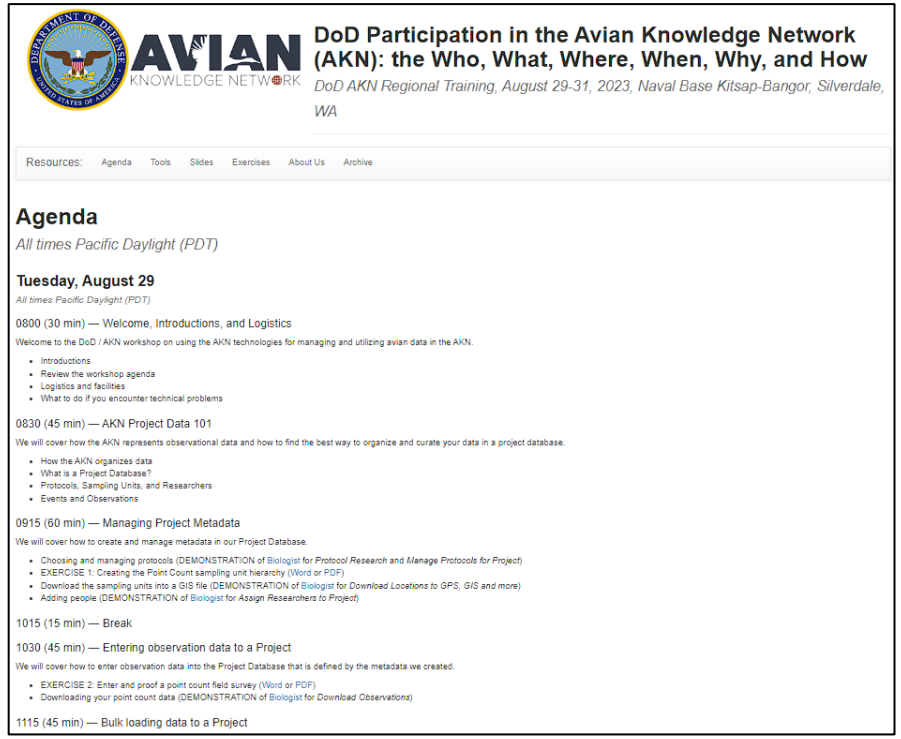
Who are **you**? (we'll call on you)

- Name, Installation, Position
- What type of avian data you collect?
- How would you like to use AKN?

INTRODUCTIONS

A FEW LOGISTICS…

- The Agenda with links (bookmark this):
  pointblue.github.io/dod_workshop
- Session: interactive & casual
- Office hours: 8 hours monthly, sign up here



DoD Participation in the Avian Knowledge Network (AKN): the Who, What, Where, When, Why, and How

DoD AKN Regional Training, August 29-31, 2023, Naval Base Kitsap-Bangor, Silverdale, WA

Resources: Agenda Tools Slides Exercises About Us Archive

Agenda

All times Pacific Daylight (PDT)

Tuesday, August 29

All times Pacific Daylight (PDT)

0800 (30 min) — Welcome, Introductions, and Logistics

Welcome to the DoD / AKN workshop on using the AKN technologies for managing and utilizing avian data in the AKN.

- Introductions
- Review the workshop agenda
- Logistics and facilities
- What to do if you encounter technical problems

0830 (45 min) — AKN Project Data 101

We will cover how the AKN represents observational data and how to find the best way to organize and curate your data in a project database.

- How the AKN organizes data
- What is a Project Database?
- Protocols, Sampling Units, and Researchers
- Events and Observations

0915 (60 min) — Managing Project Metadata

We will cover how to create and manage metadata in our Project Database.

- Choosing and managing protocols (DEMONSTRATION of Biologist for *Protocol Research* and *Manage Protocols for Project*)
- EXERCISE 1: Creating the Point Count sampling unit hierarchy (Word or PDF)
- Download the sampling units into a GIS file (DEMONSTRATION of Biologist for *Download Locations to GPS, GIS and more*)
- Adding people (DEMONSTRATION of Biologist for *Assign Researchers to Project*)

1015 (15 min) — Break

1030 (45 min) — Entering observation data to a Project

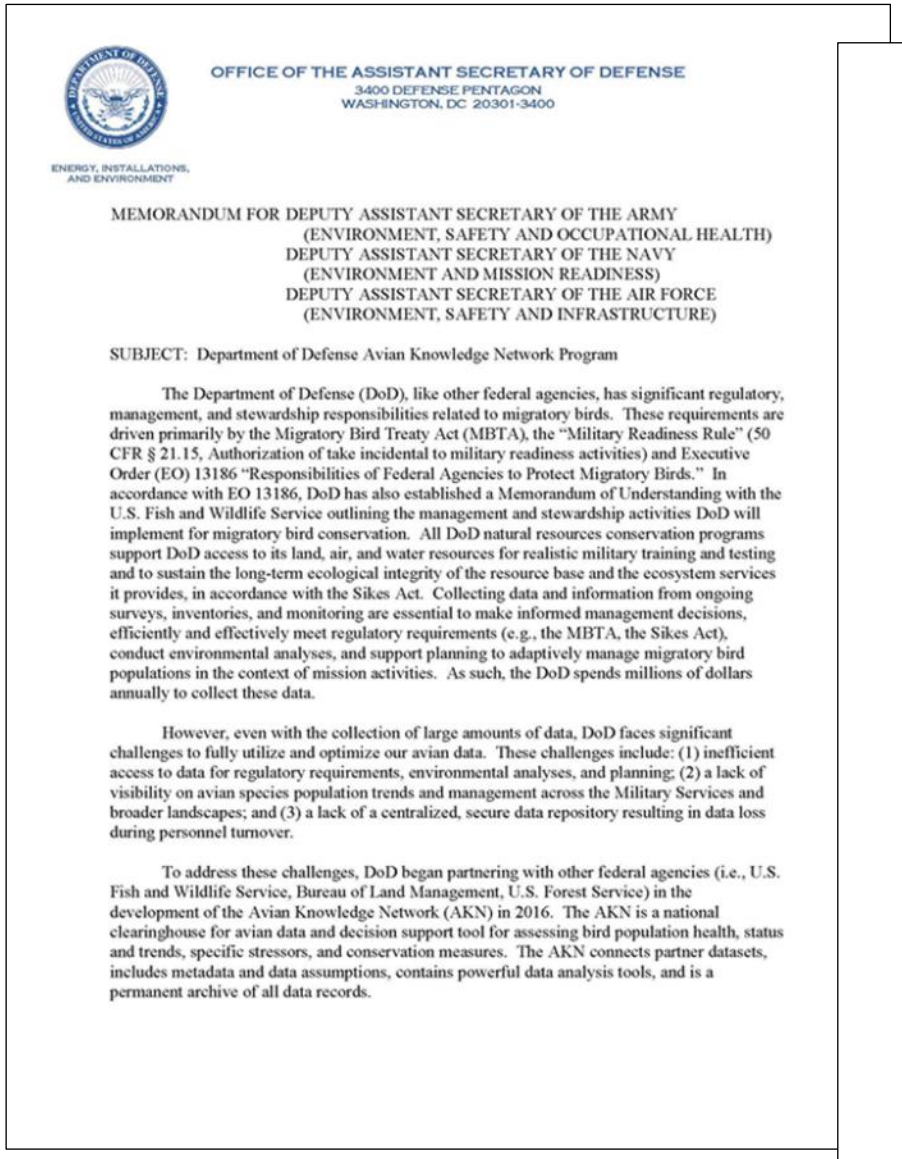
We will cover how to enter observation data into the Project Database that is defined by the metadata we created.

- EXERCISE 2: Enter and proof a point count field survey (Word or PDF)
- Downloading your point count data (DEMONSTRATION of Biologist for *Download Observations*)

1115 (45 min) — Bulk loading data to a Project

- Bring lunch or go out to lunch nearby (1hr)
- Parking lot items

https://www.dodakn.org/resources/get-training/#office-hourss/



OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
3400 DEFENSE PENTAGON
WASHINGTON, DC 20301-3400

ENERGY, INSTALLATIONS, AND ENVIRONMENT

MEMORANDUM FOR DEPUTY ASSISTANT SECRETARY OF THE ARMY
(ENVIRONMENT, SAFETY AND OCCUPATIONAL HEALTH)
DEPUTY ASSISTANT SECRETARY OF THE NAVY
(ENVIRONMENT AND MISSION READINESS)
DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE
(ENVIRONMENT, SAFETY AND INFRASTRUCTURE)

SUBJECT: Department of Defense Avian Knowledge Network Program

The Department of Defense (DoD), like other federal agencies, has significant regulatory, management, and stewardship responsibilities related to migratory birds. These requirements are driven primarily by the Migratory Bird Treaty Act (MBTA), the "Military Readiness Rule" (50 CFR § 21.15, Authorization of take incidental to military readiness activities) and Executive Order (EO) 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds." In accordance with EO 13186, DoD has also established a Memorandum of Understanding with the U.S. Fish and Wildlife Service outlining the management and stewardship activities DoD will implement for migratory bird conservation. All DoD natural resources conservation programs support DoD access to its land, air, and water resources for realistic military training and testing and to sustain the long-term ecological integrity of the resource base and the ecosystem services it provides, in accordance with the Sikes Act. Collecting data and information from ongoing surveys, inventories, and monitoring are essential to make informed management decisions, efficiently and effectively meet regulatory requirements (e.g., the MBTA, the Sikes Act), conduct environmental analyses, and support planning to adaptively manage migratory bird populations in the context of mission activities. As such, the DoD spends millions of dollars annually to collect these data.

However, even with the collection of large amounts of data, DoD faces significant challenges to fully utilize and optimize our avian data. These challenges include: (1) inefficient access to data for regulatory requirements, environmental analyses, and planning; (2) a lack of visibility on avian species population trends and management across the Military Services and broader landscapes; and (3) a lack of a centralized, secure data repository resulting in data loss during personnel turnover.

To address these challenges, DoD began partnering with other federal agencies (i.e., U.S. Fish and Wildlife Service, Bureau of Land Management, U.S. Forest Service) in the development of the Avian Knowledge Network (AKN) in 2016. The AKN is a national clearinghouse for avian data and decision support tool for assessing bird population health, status and trends, specific stressors, and conservation measures. The AKN connects partner datasets, includes metadata and data assumptions, contains powerful data analysis tools, and is a permanent archive of all data records.

This office fully endorses the use of AKN and requests that each DoD Component utilize AKN to the maximum extent practicable and provide staff the support needed to make AKN the best tool for DoD. A coordinated and comprehensive approach to implement DoD's participation in the AKN will directly support the military mission and improve the quality and effectiveness of bird conservation on DoD installations. For DoD to fully employ the power of AKN, user training and significant initial data management is required. This office, through the DoD Legacy Resource Management Program, is committed to providing baseline support and resources to help implement AKN. This support will provide training and education for personnel, and technical assistance related to system use and data management. The DoD AKN Director is Ms. Elizabeth Neipert, at elizabeth.s.neipert@erdc.dren.mil or 907-201-6244.

Additionally, a national Cooperative Agreement has been established to support AKN implementation. It provides a streamlined process for DoD Components and installations to contribute additional resources to meet their unique needs.

The point of contact for this office is Ms. Liz Galli-Noble, DoD Senior Natural Resources Program Manager and Legacy Resource Management Program Manager, elizabeth.j.galli-noble.civ@mail.mil or 406-581-8148

KIDD.RICHARD.GODWIN.IV.1163856081

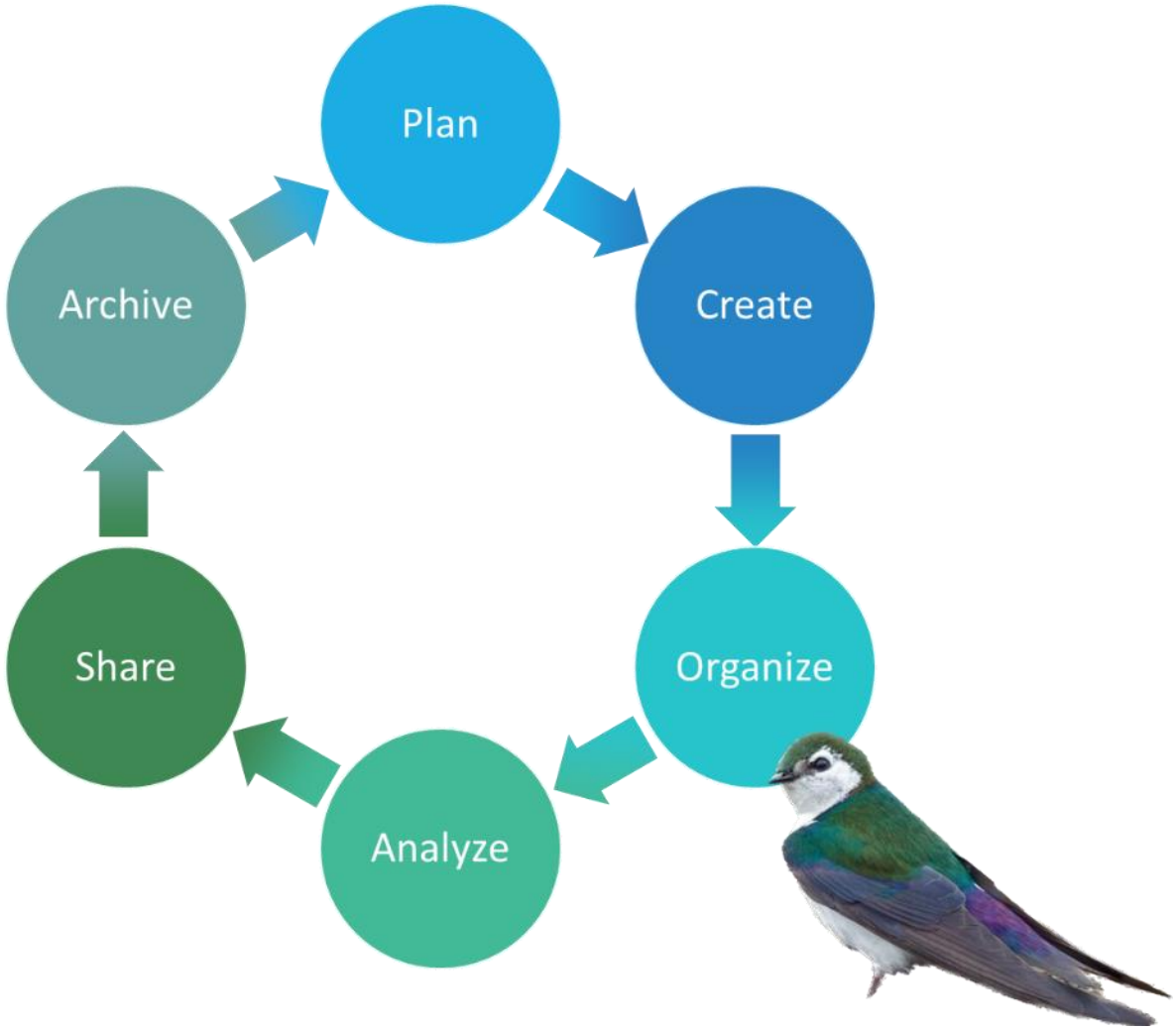
Richard G. Kidd IV
Deputy Assistant Secretary of Defense
(Environment and Energy Resilience)

2

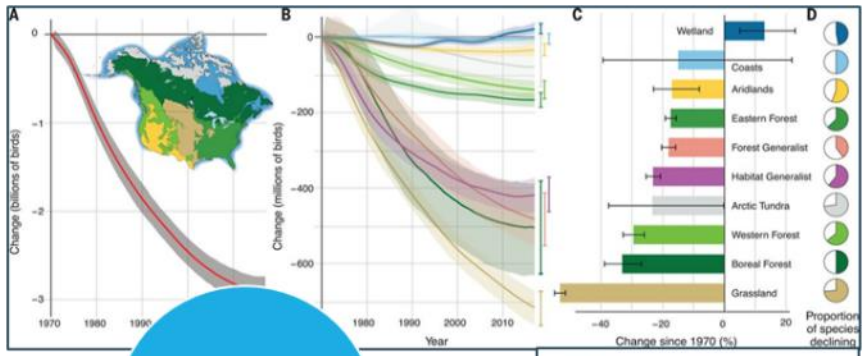
DoD MANDATE MEMO

FULL AVIAN DATA LIFE CYCLE

FULL AVIAN DATA LIFE CYCLE



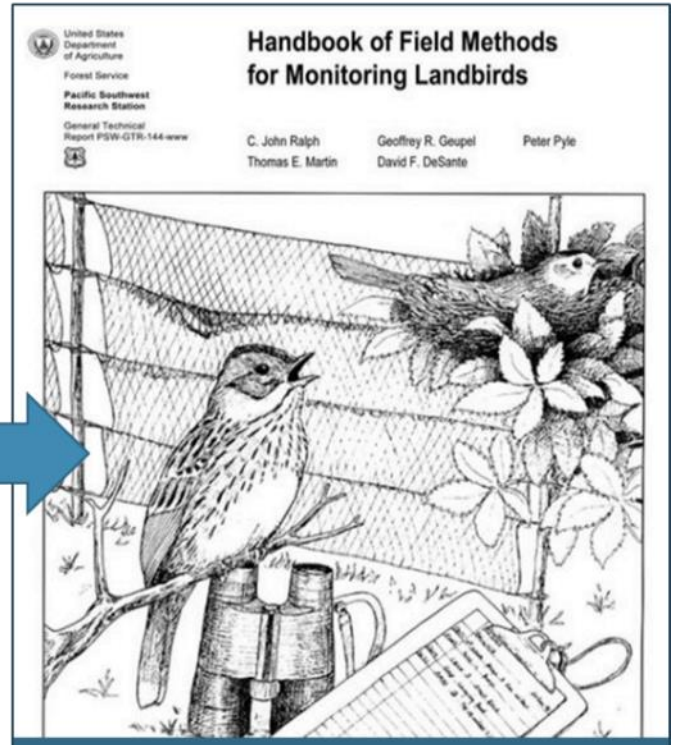
FULL AVIAN DATA LIFE CYCLE



Objective: population trends

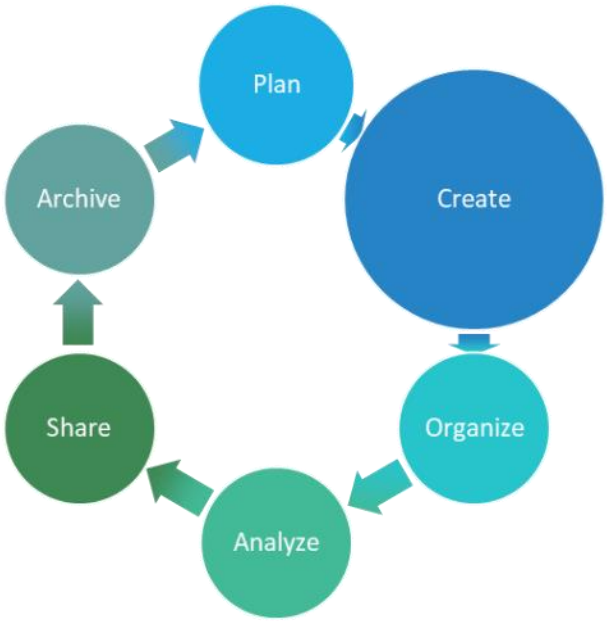
Objective: restoration & management

SURVEY OBJECTIVES



APPROPRIATE METHODOLOGIES

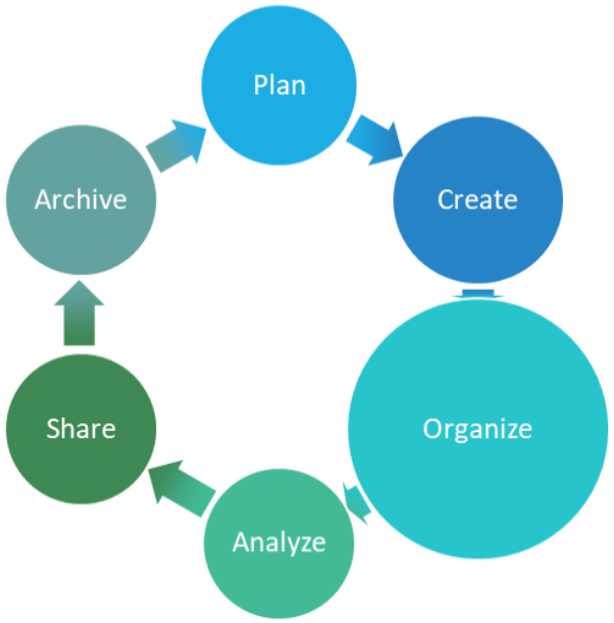
FULL AVIAN DATA LIFE CYCLE



FIELD SAMPLING-OBSERVATIONS

FIELD FORM-DATA

FULL AVIAN DATA LIFE CYCLE



DATA ENTRY
QA/QC

Observations

Species observations with details, layout and titles dependent on protocol.

Quick Tips >>

☐ Separate observations on individual rows
☐ Scroll observations (not compatible with all browsers)

Observation Protocol: VCP100Sx
Total Birds Counted: 7

Download CSV

Point	Time	Species	Time Bin	Count	Detection	Distance	AnimalSex	Notes	
DI-10A	07:21	RWBL	1	1	S	52	Male		✖
DI-10A	07:21	RWBL	1	1	V	52	Male		✖
DI-10A	07:22	TUVU	2	1	V	FLO			✖
DI-10A	07:24	LASP	4	1	V	26			✖
DI-10A	07:24	LASP	4	1	V	94			✖
DI-10A	07:25	LASP	5	1	C	53			✖

FULL AVIAN DATA LIFE CYCLE

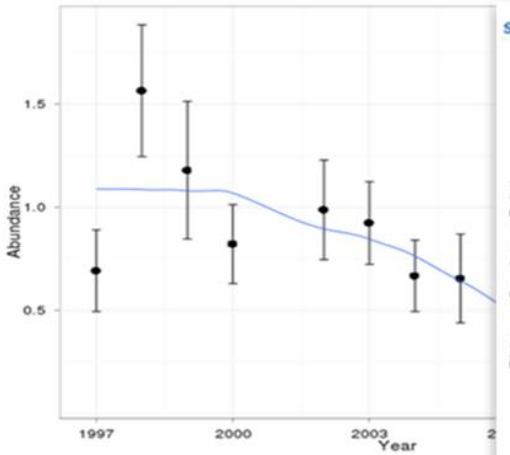
ANALYSIS

Total Number of Observations of each Species by Year

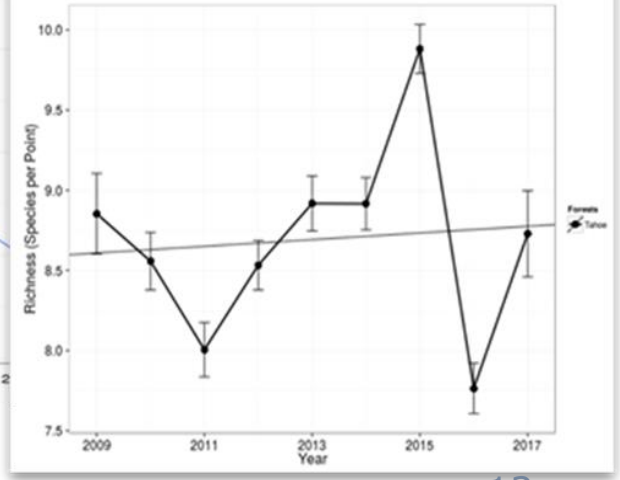
copy table to: CSV HTML DOC PDF

Common Name	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
American Crow	0	7	2	0	5	25	11	5	1	11	0
American Dipper	1	5	7	2	5	1	1	3	3	3	6
American Goldfinch	0	33	0	17	28	15	38	8	21	8	36
American Kestrel	0										
American Pipit	5										
American Redstart	0										
American Robin	44										
American Three-toed Woodpecker	2										
Audubon's Warbler	55										
Bald Eagle	0										
Band-tailed Pigeon	0										
Barn Swallow	0										
Barred Owl	1										

Trend in Abundance over YearCollected. Generalized additive trend estimate of Abundance by Year with locally weighed (loess) smoother. Estimate for Species = Song Sparrow Using Locally Weighed (loess) Smoother

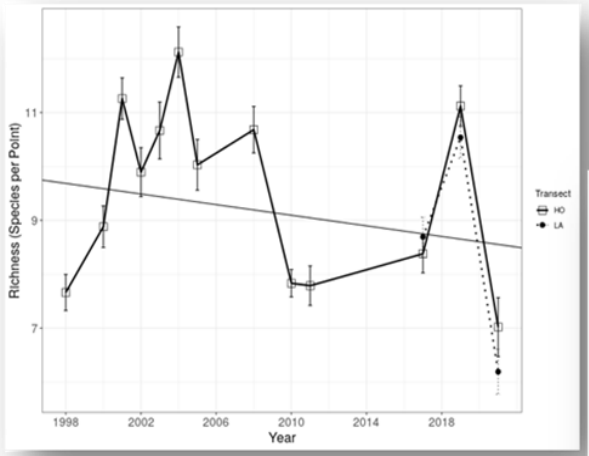


Simple linear trend estimate of Richness (Species per Point) by Year

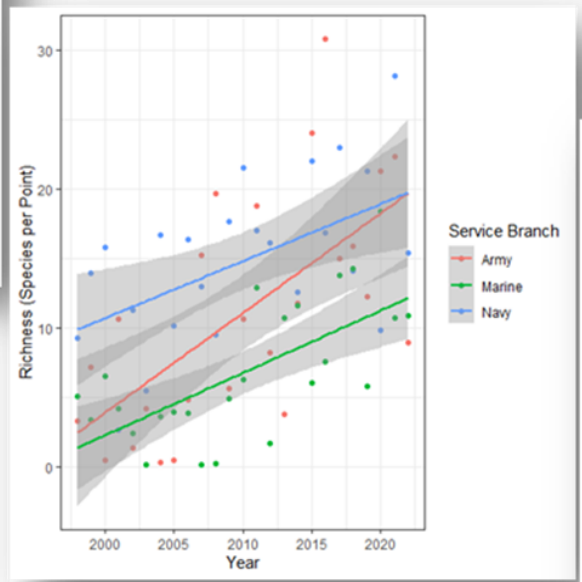


FULL AVIAN DATA LIFE CYCLE

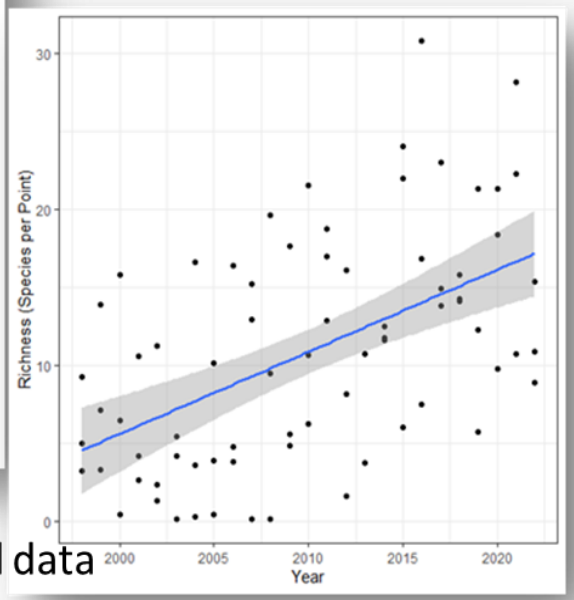
Vandenberg Space Force Base
Project Riparian Richness



Service Branch Program
Riparian Bird Richness



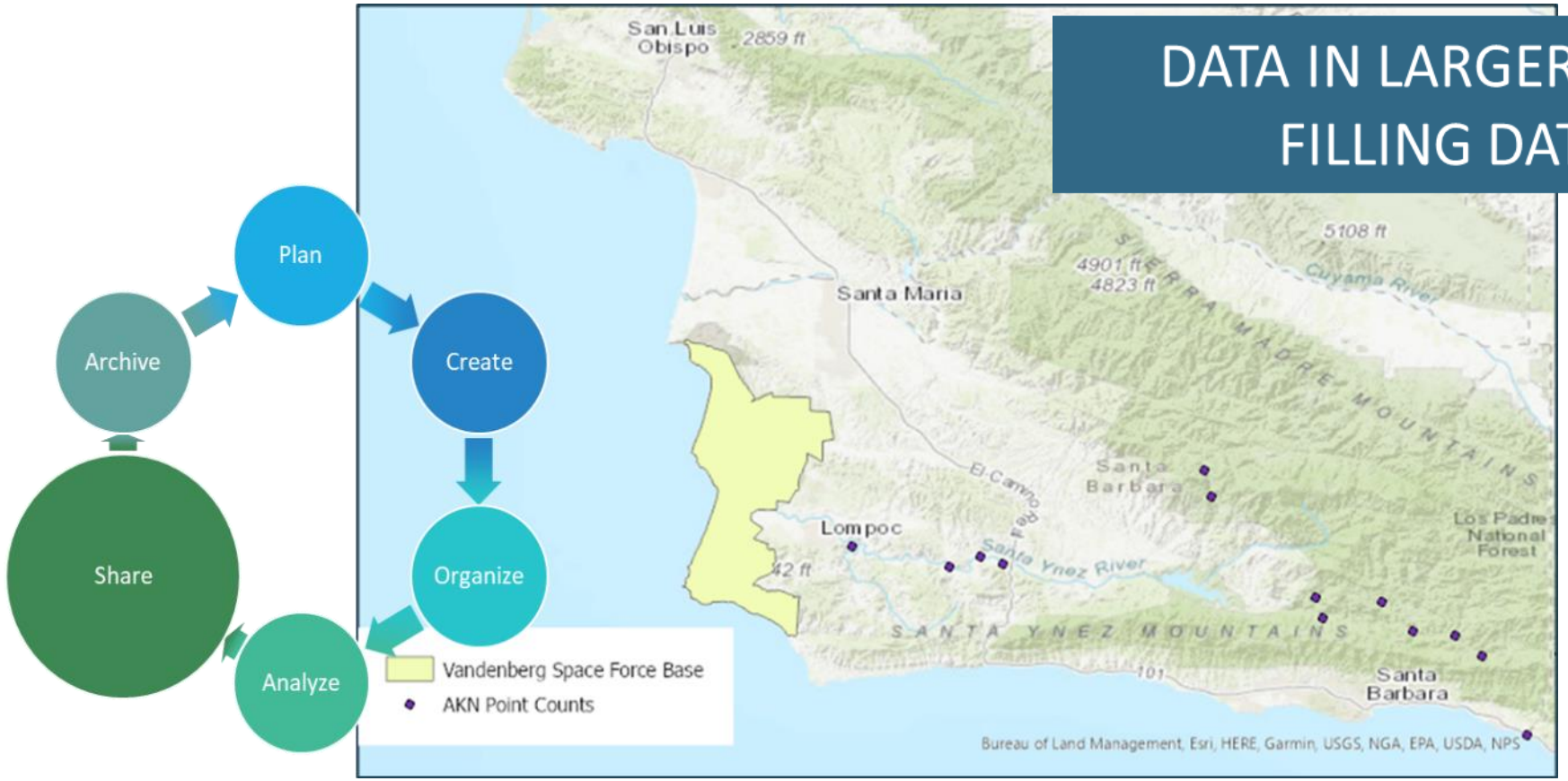
DoD Program
Riparian Bird Richness



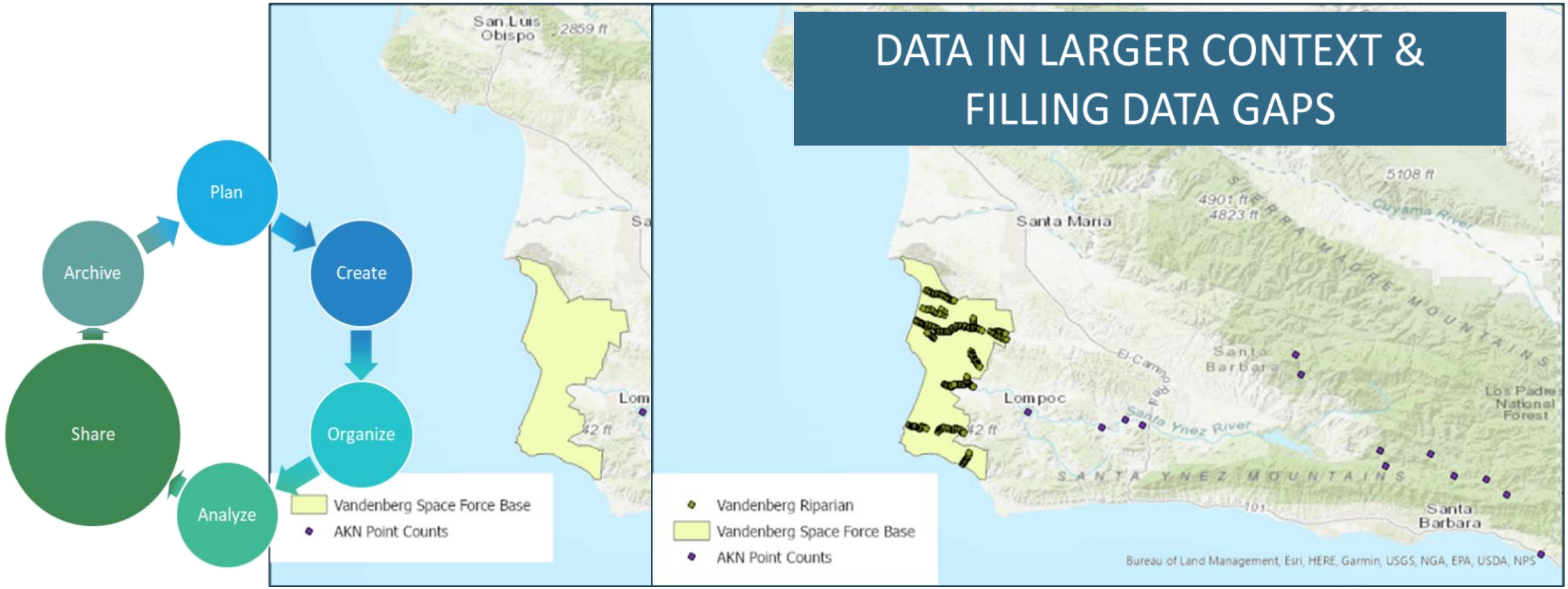
ANALYSIS AT MULTIPLE SCALES

*Simulated data

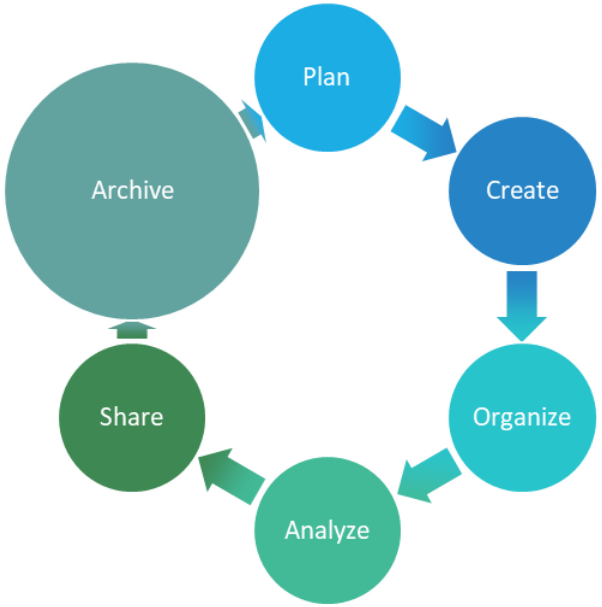
FULL AVIAN DATA LIFE CYCLE

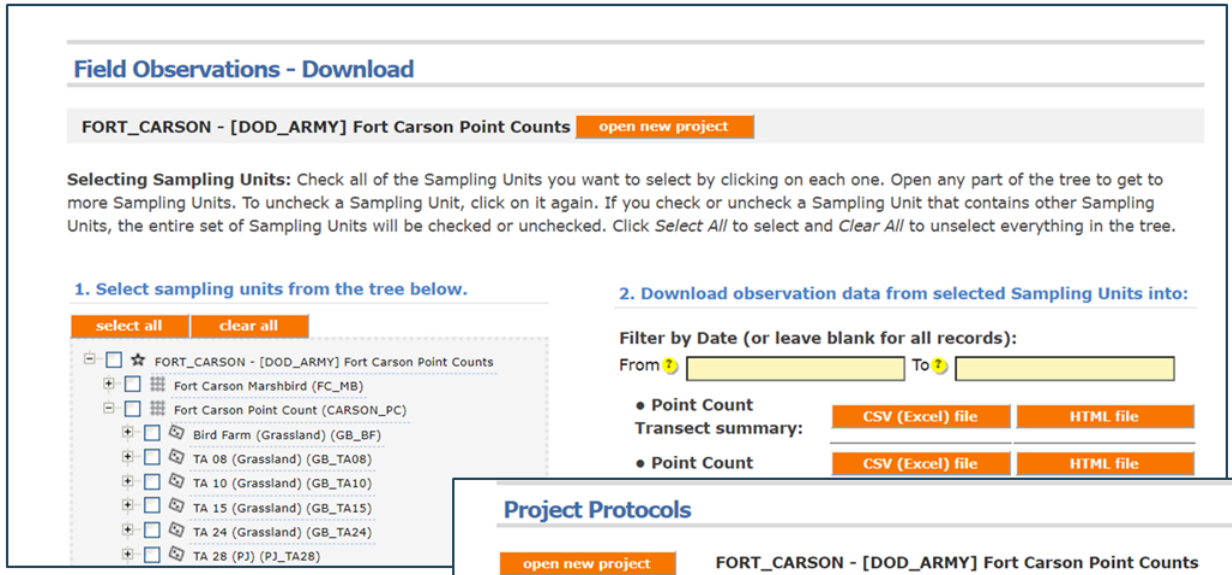


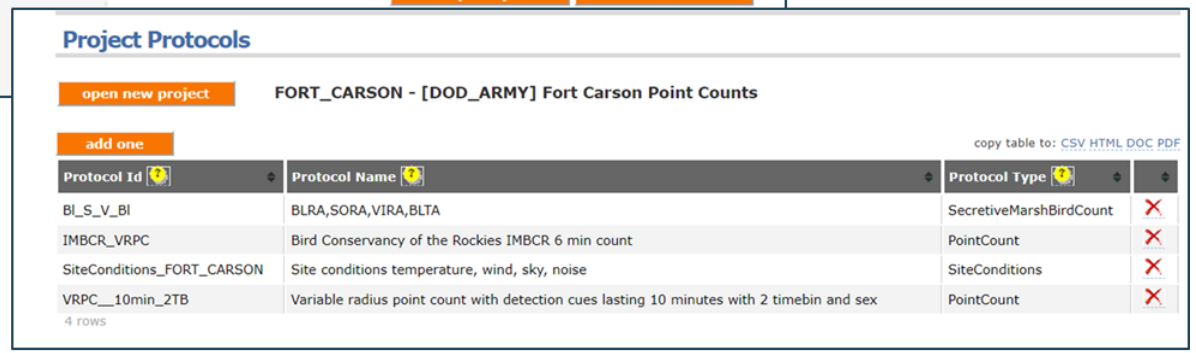
FULL AVIAN DATA LIFE CYCLE



FULL AVIAN DATA LIFE CYCLE

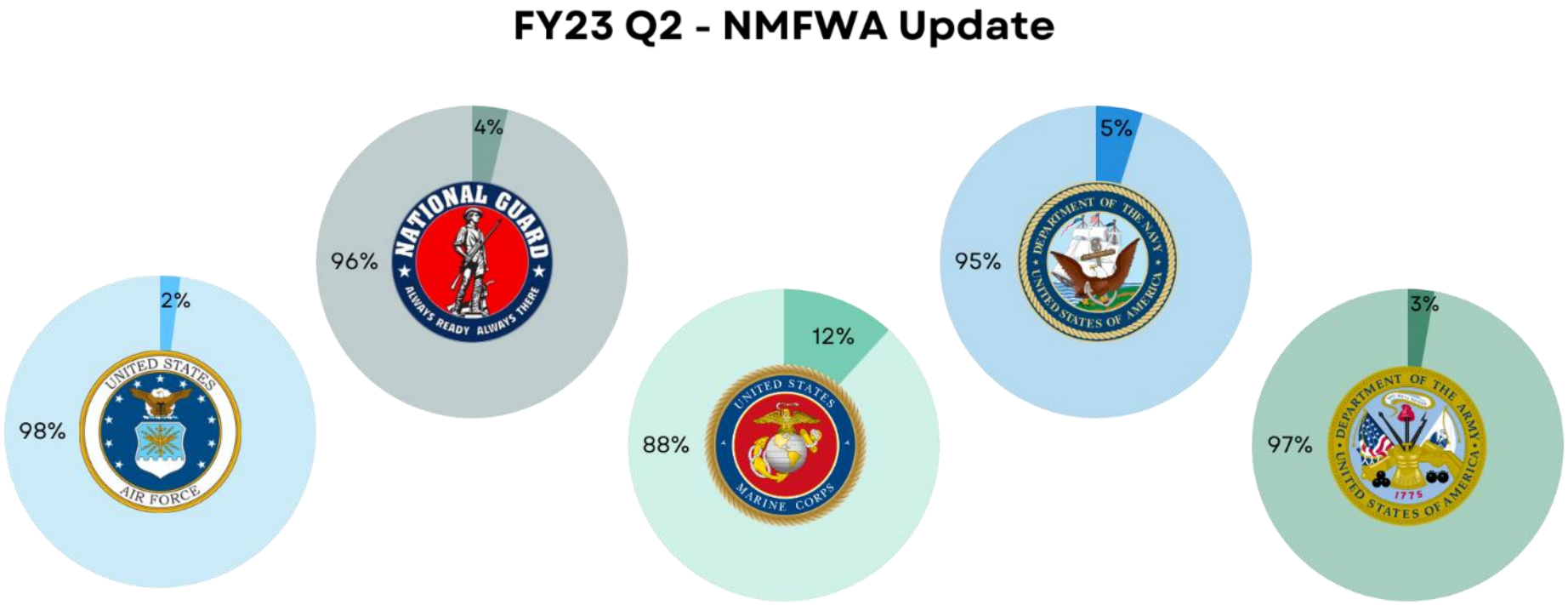






PERMANENT STORAGE & ACCESS

341 installations that require **Integrated Natural Resources Management Plans**



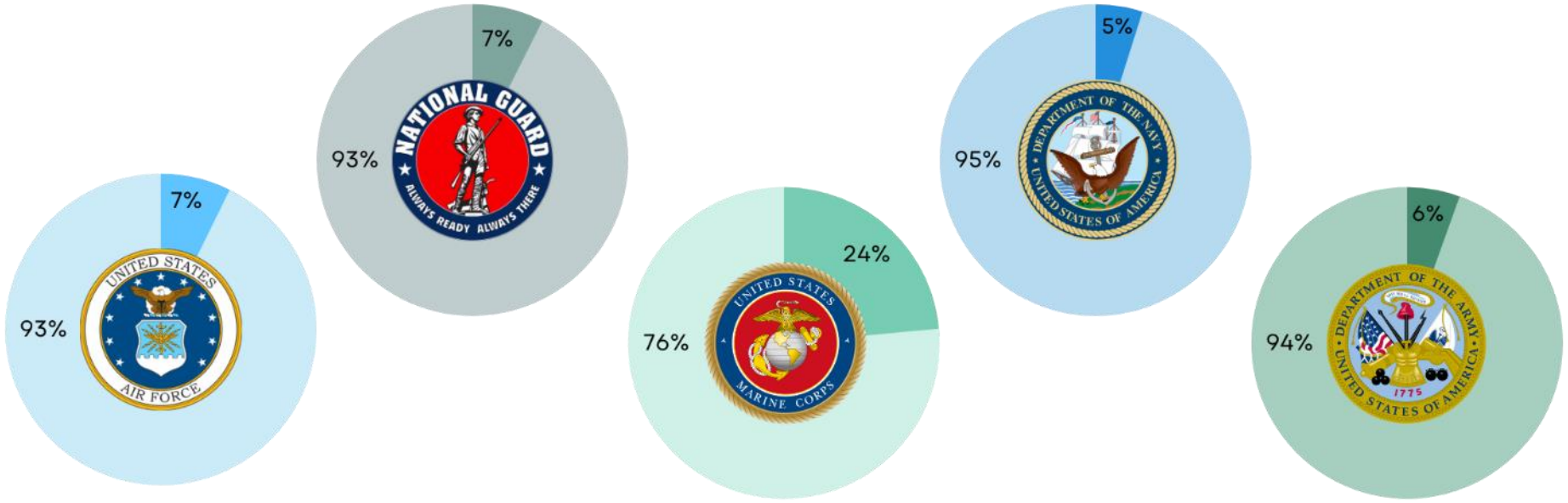
Total Number of Installations: **146** Army, **82** Navy, **96** Air Force, **17** Marine Corps, **54** National Guard states/territories

Dark colors - Installations with Contemporary Data

Light colors - Installations without Contemporary Data

341 installations that require **Integrated Natural Resources Management Plans**

CURRENT TO-DATE (FY23 Q4)



Total Number of Installations: **146** Army, **82** Navy, **96** Air Force, **17** Marine Corps, **54** National Guard states/territories

Dark colors - Installations with Contemporary Data

Light colors - Installations without Contemporary Data

CAN YOU LOG IN?

Biologists:

data.pointblue.org/science/biologists

Problems logging in?

Best to find a buddy or have one of us help!

LIMITATIONS AND CAVEATS

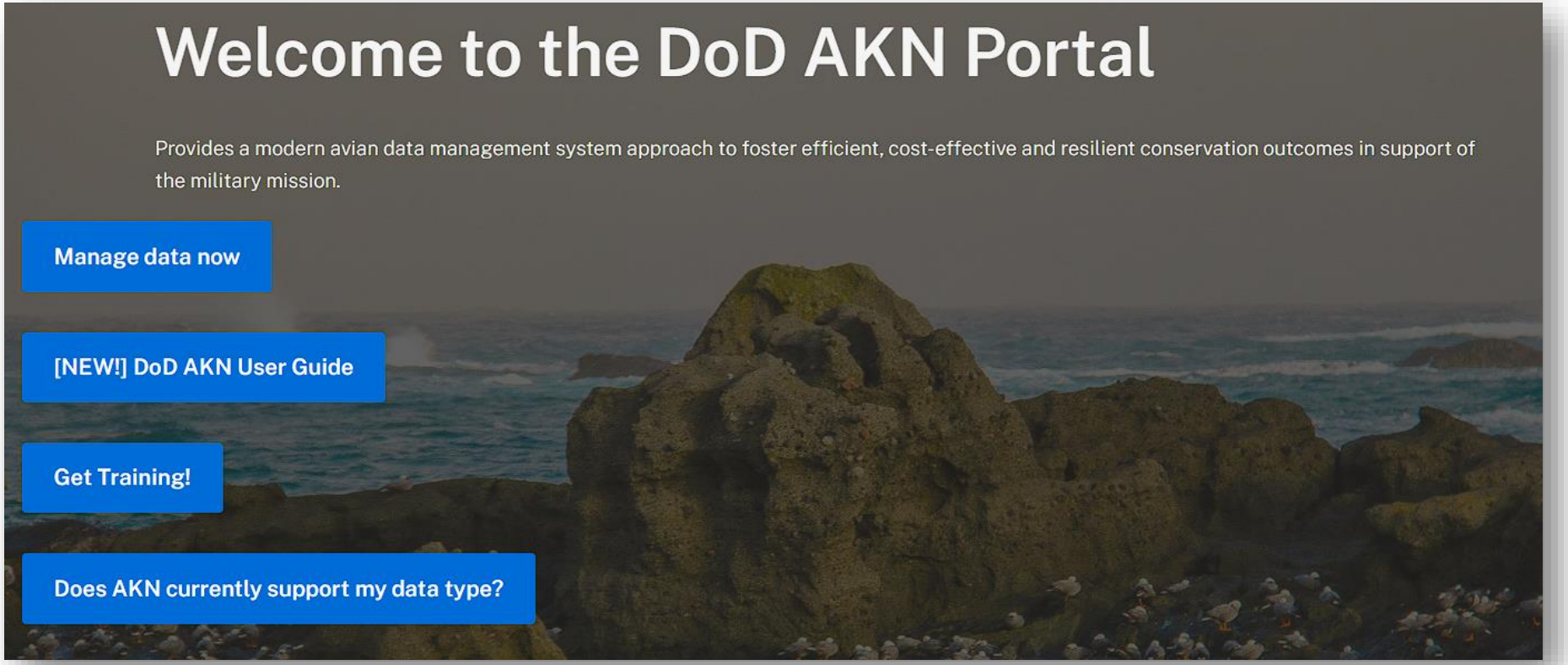
Focus for this training: Point Count data

Office hours are where we can dig deeply into your installation's specific projects, data needs, and issues.

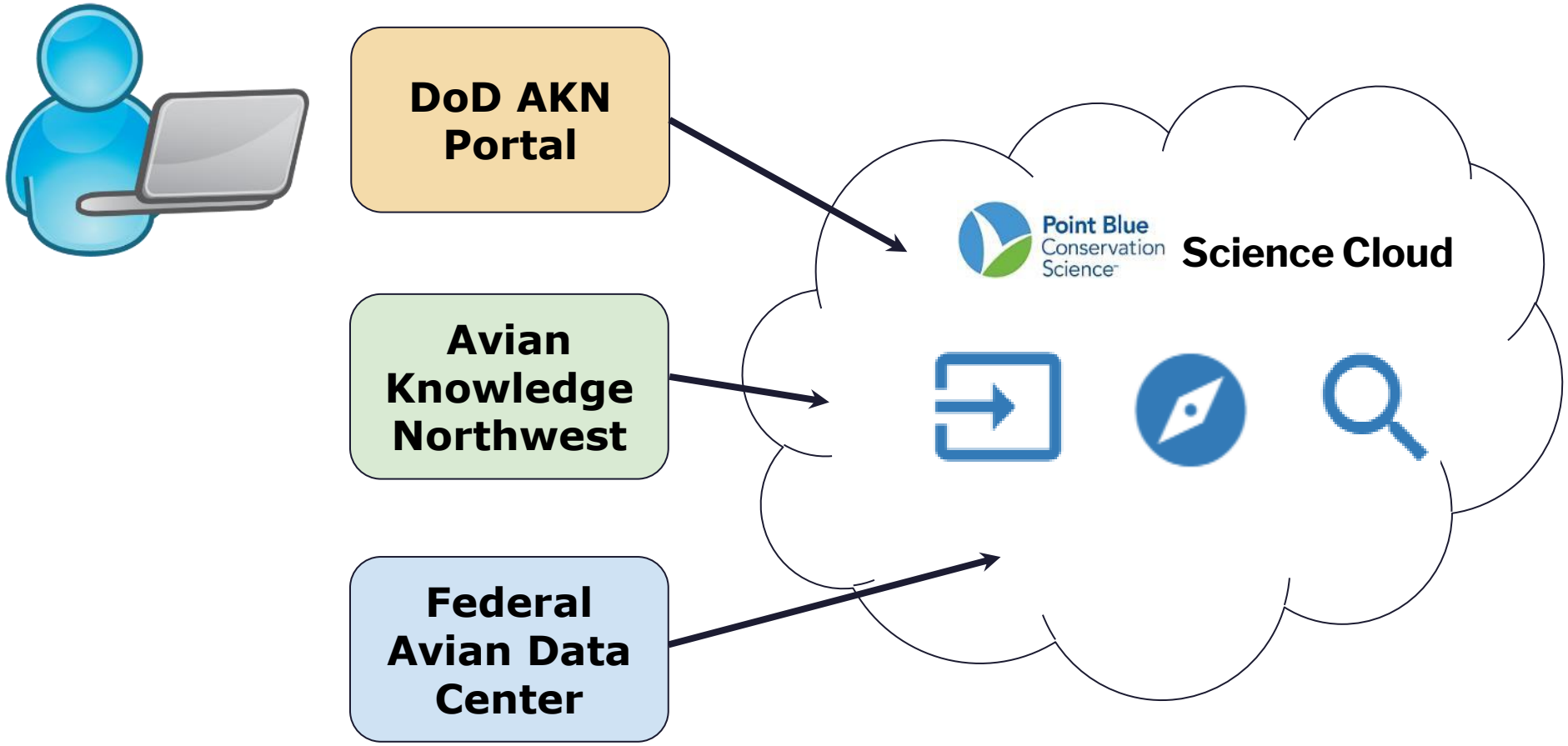
AKN PROJECT DATA 101

DoD AKN PORTAL

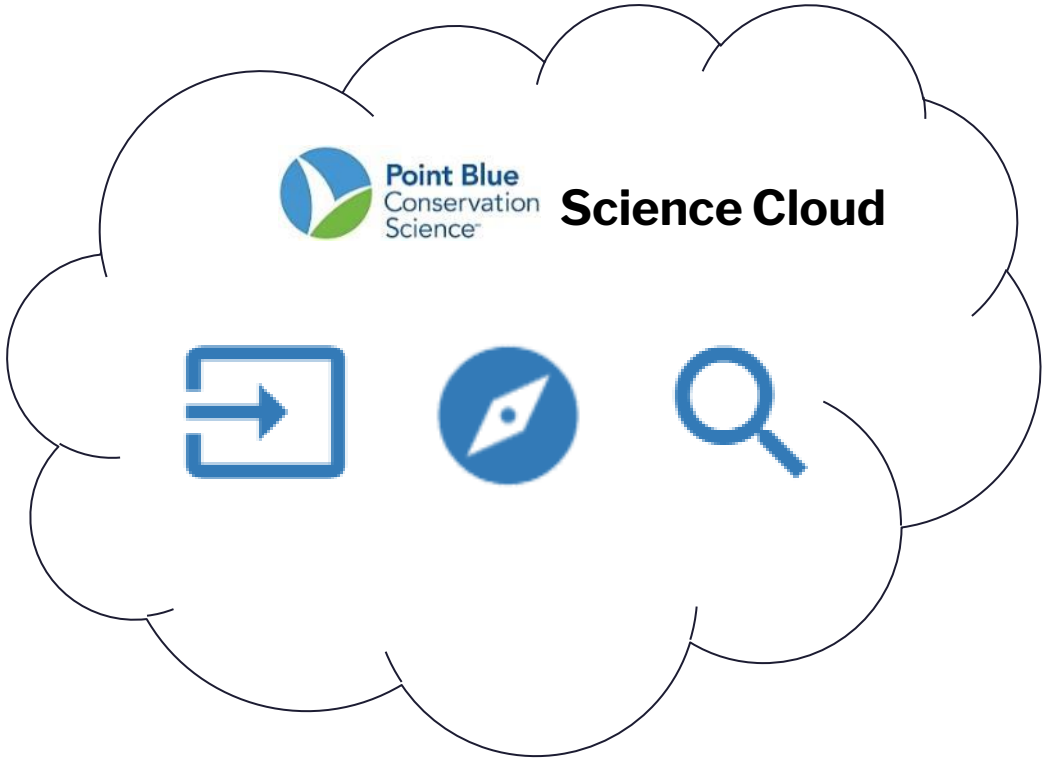
https://www.dodakn.org/



AKN: COMMON CLOUD TECHNOLOGY



FOCUS FOR THIS TRAINING



How do we represent protocol-based science?

How do you get data in?

How do you get your data & information out?

What conservation questions can you answer?

MA ARMY NATIONAL GUARD

- Biologist leaving position one week after training
- Had 20+ years of data
- Working through data, realized inconsistencies in data entry
- Standardized protocol in system, showing required fields to be utilized in all future surveys
- Successfully uploaded 35,000 records prior to leaving DoD
- Data ready and available to successor

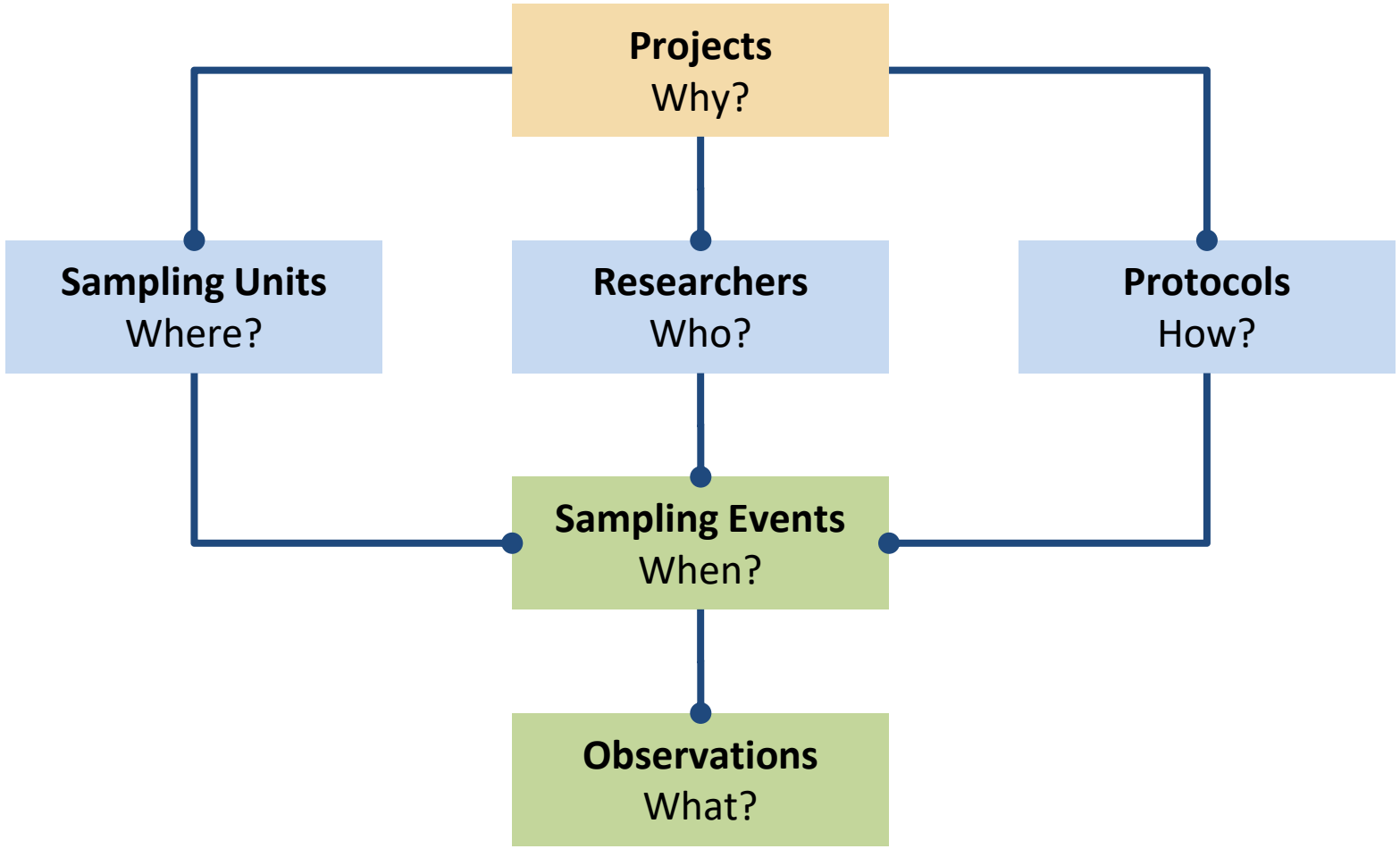
AKN PROJECT DATA 101

1. The parts of a Project Database

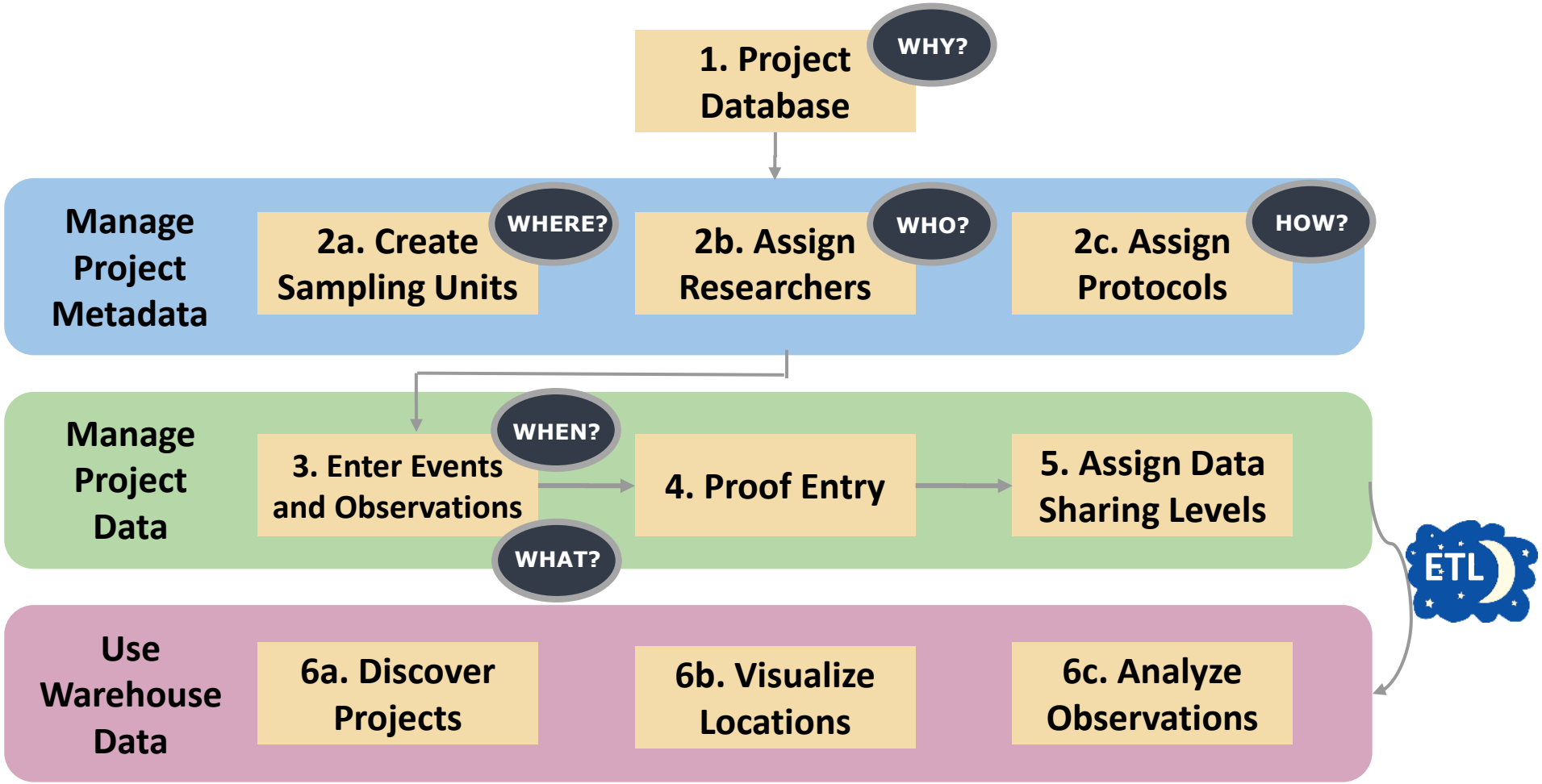
2. The workflow for creating and managing a Project

Photo: Mick Thompson

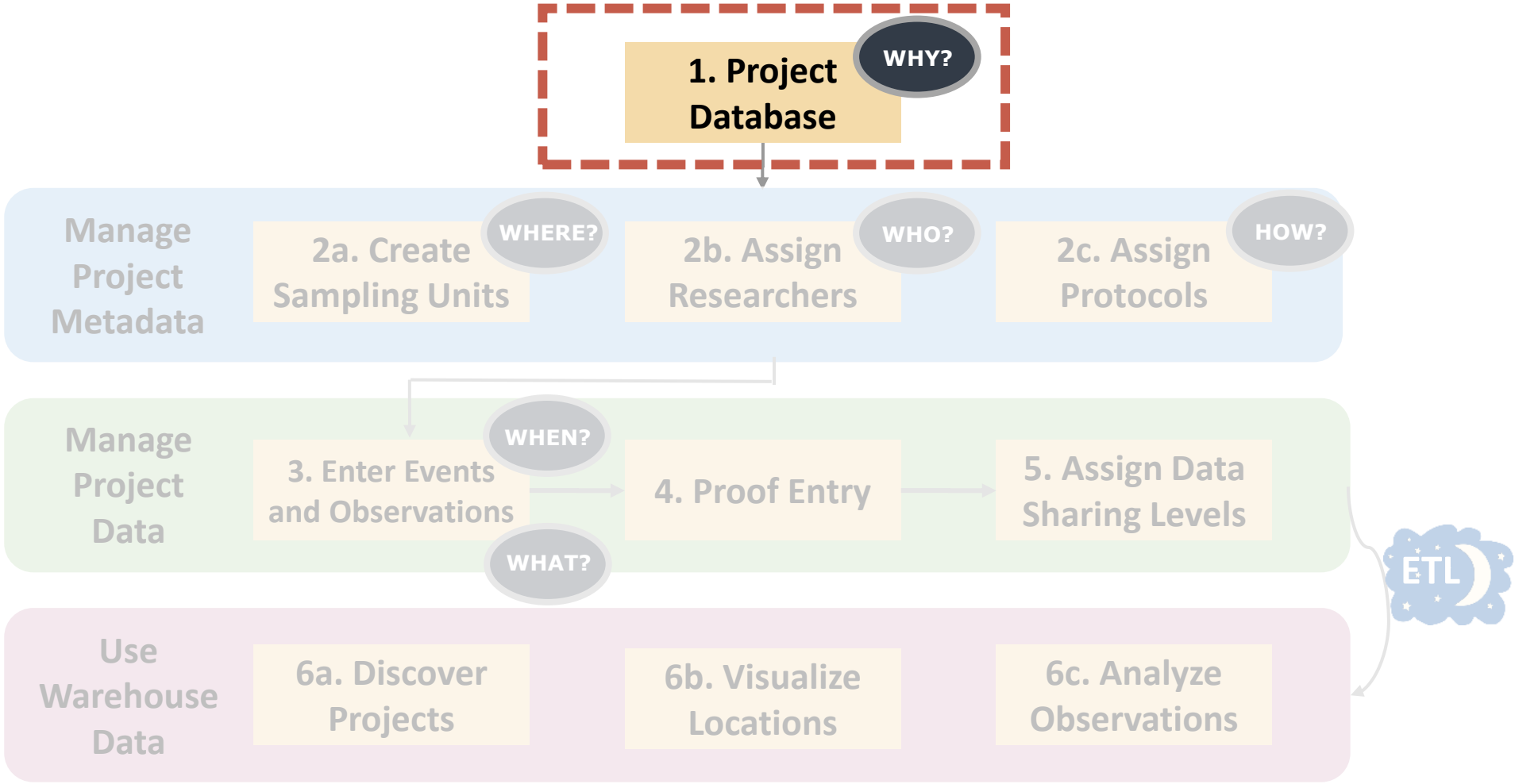
THE PROJECT DATABASE



WORKFLOW FOR MANAGING A PROJECT



WORKFLOW FOR MANAGING A PROJECT



PROJECT

Container for Event and Observation data

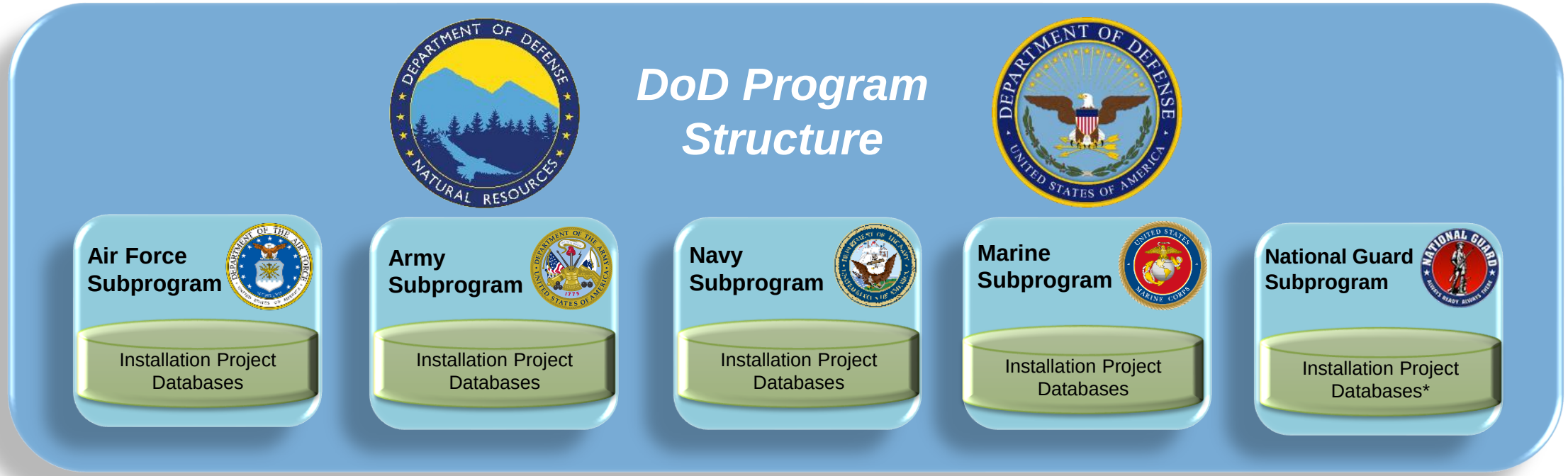
Many ways to organize

For DoD: Project = Installation*

1. Project Database

WHY?

DoD Program Structure

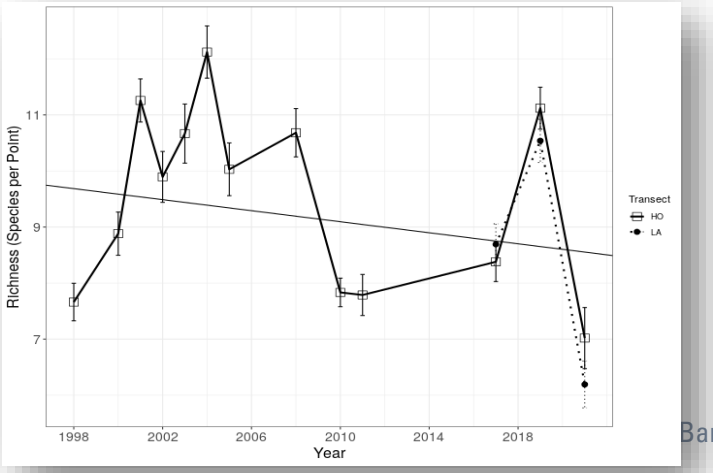


*National Guard Projects = State Installation = Study Area

DoD Program Structure

- **Air Force Subprogram** — Installation Project Databases
- **Army Subprogram** — Installation Project Databases
- **Navy Subprogram** — Installation Project Databases
- **Marine Subprogram** — Installation Project Databases
- **National Guard Subprogram** — Installation Project Databases

Vandenberg Space Force Base Project
Riparian Richness



DoD Program Structure

Air Force Subprogram
Installation Project Databases

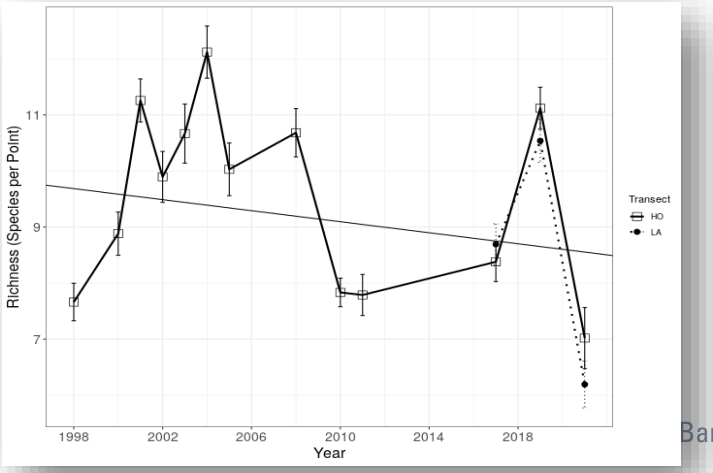
Army Subprogram
Installation Project Databases

Navy Subprogram
Installation Project Databases

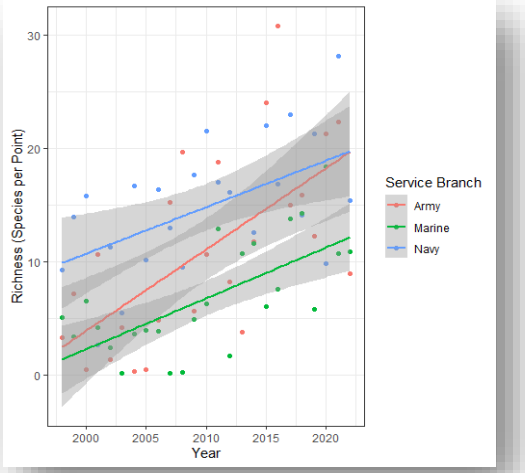
Marine Subprogram
Installation Project Databases

National Guard Subprogram
Installation Project Databases

Vandenberg Space Force Base Project Riparian Richness



Service Branch Program Riparian Bird Richness



DoD Program Structure

Air Force Subprogram
Installation Project Databases

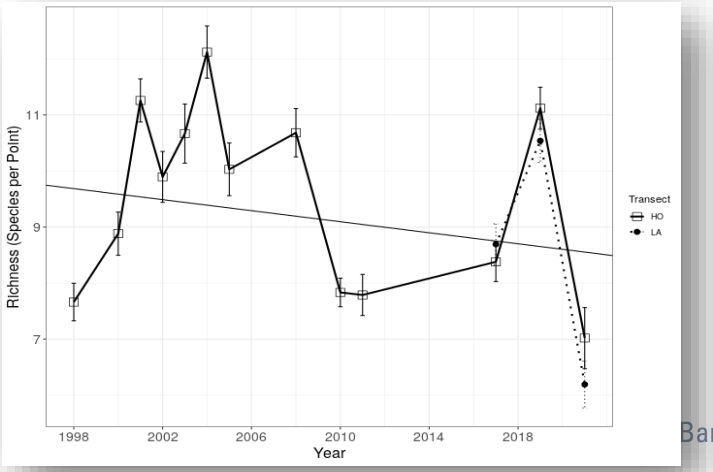
Army Subprogram
Installation Project Databases

Navy Subprogram
Installation Project Databases

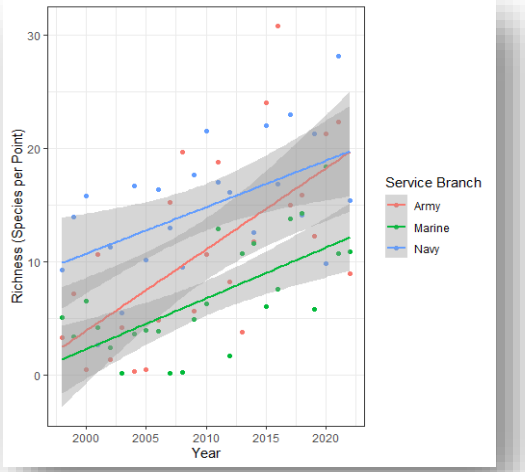
Marine Subprogram
Installation Project Databases

National Guard Subprogram
Installation Project Databases

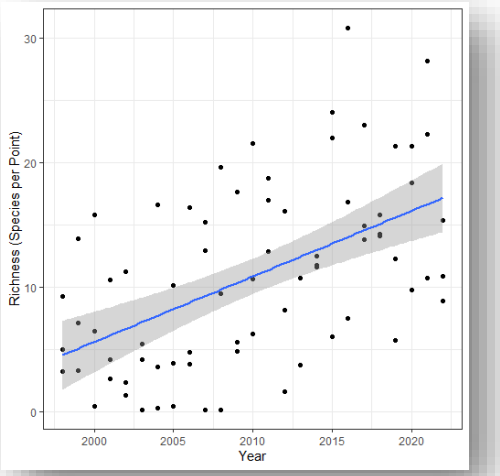
Vandenberg Space Force Base Project Riparian Richness



Service Branch Program Riparian Bird Richness



DoD Program Riparian Bird Richness



CASE STUDY:

SCIENCE TO SUPPORT LANDSCAPE LEVEL CONSERVATION

NORTH PACIFIC LANDSCAPE CONSERVATION COOPERATIVE

- Data integration for landscape-scale conservation analysis
- Understanding climate change effects or species and ecosystems
- Identify projected future biodiversity hotspots
- Provide interfaces to, geospatial and baseline data fundamental to understanding climate change effects

CASE STUDY:

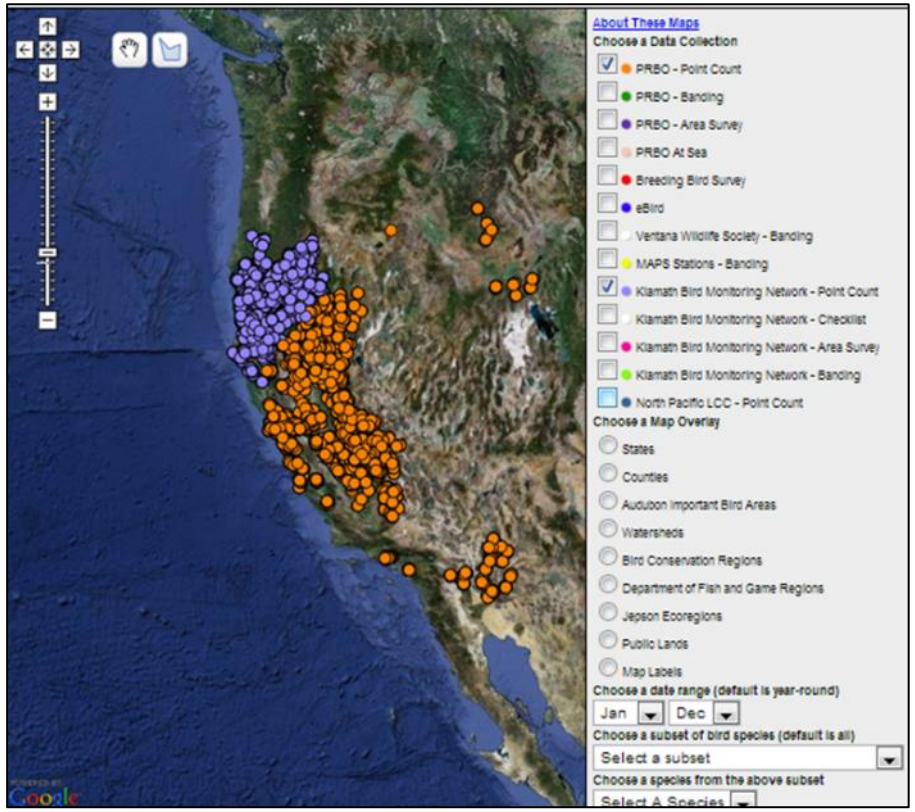
SCIENCE TO SUPPORT LANDSCAPE LEVEL CONSERVATION

NORTH PACIFIC LANDSCAPE CONSERVATION COOPERATIVE

17 Data contributors:

23 datasets

Over 900,000 new records



Point Blue Conservation Science

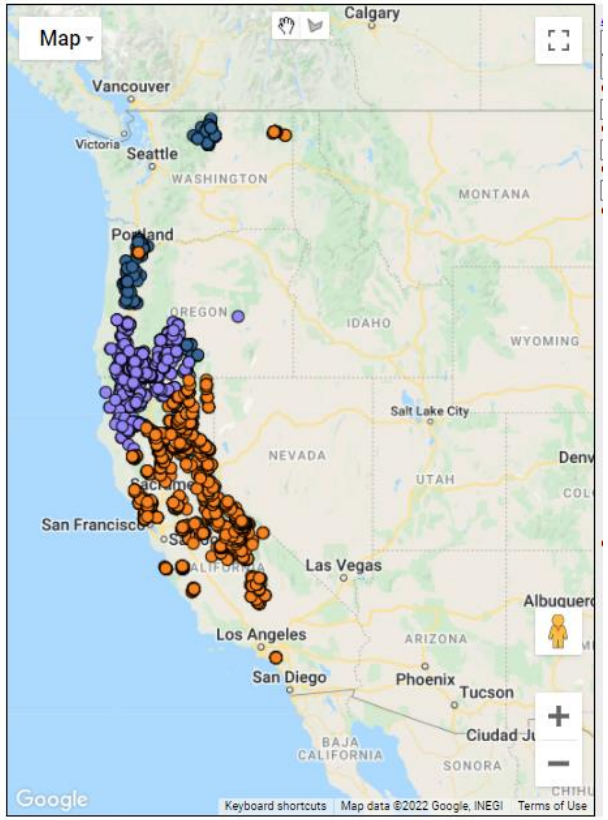
Klamath Bird Observatory

AMERICAN BIRD CONSERVANCY

CASE STUDY:

UNDERSTANDING CLIMATE CHANGE EFFECTS ON SPECIES

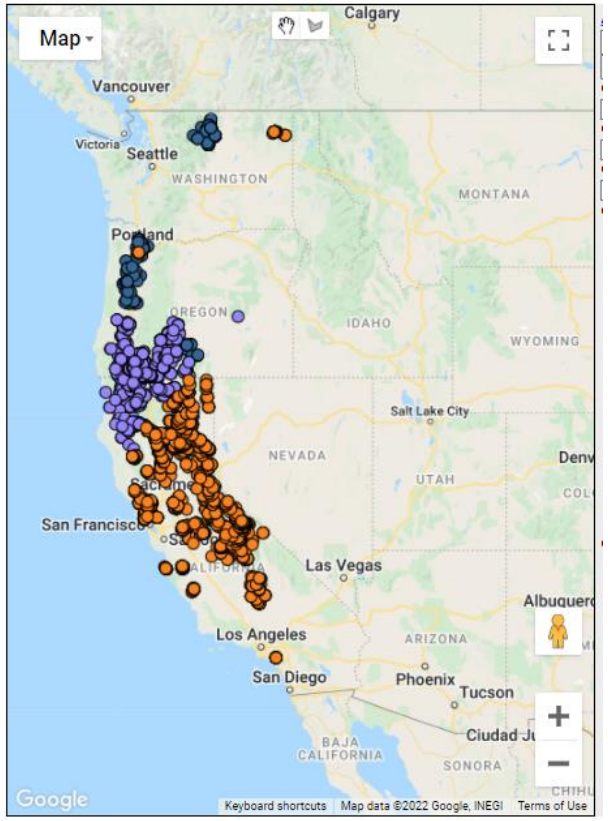
NORTH PACIFIC LANDSCAPE CONSERVATION COOPERATIVE



CASE STUDY:

UNDERSTANDING CLIMATE CHANGE EFFECTS ON SPECIES

NORTH PACIFIC LANDSCAPE CONSERVATION COOPERATIVE



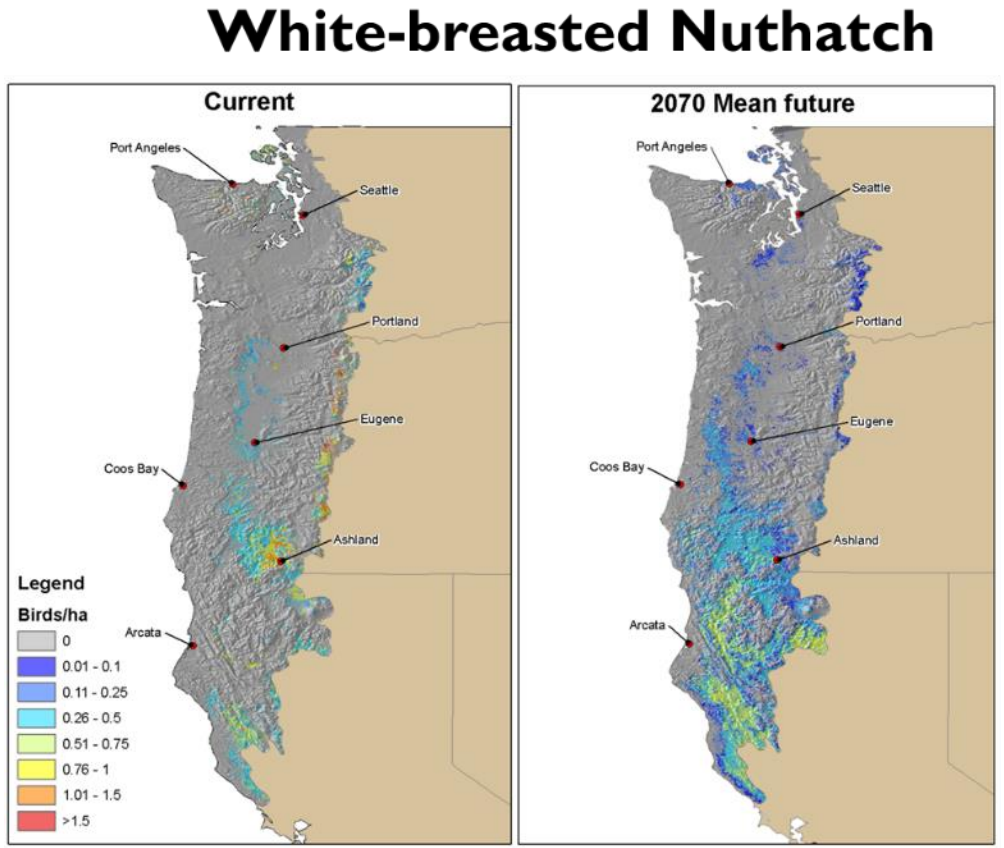
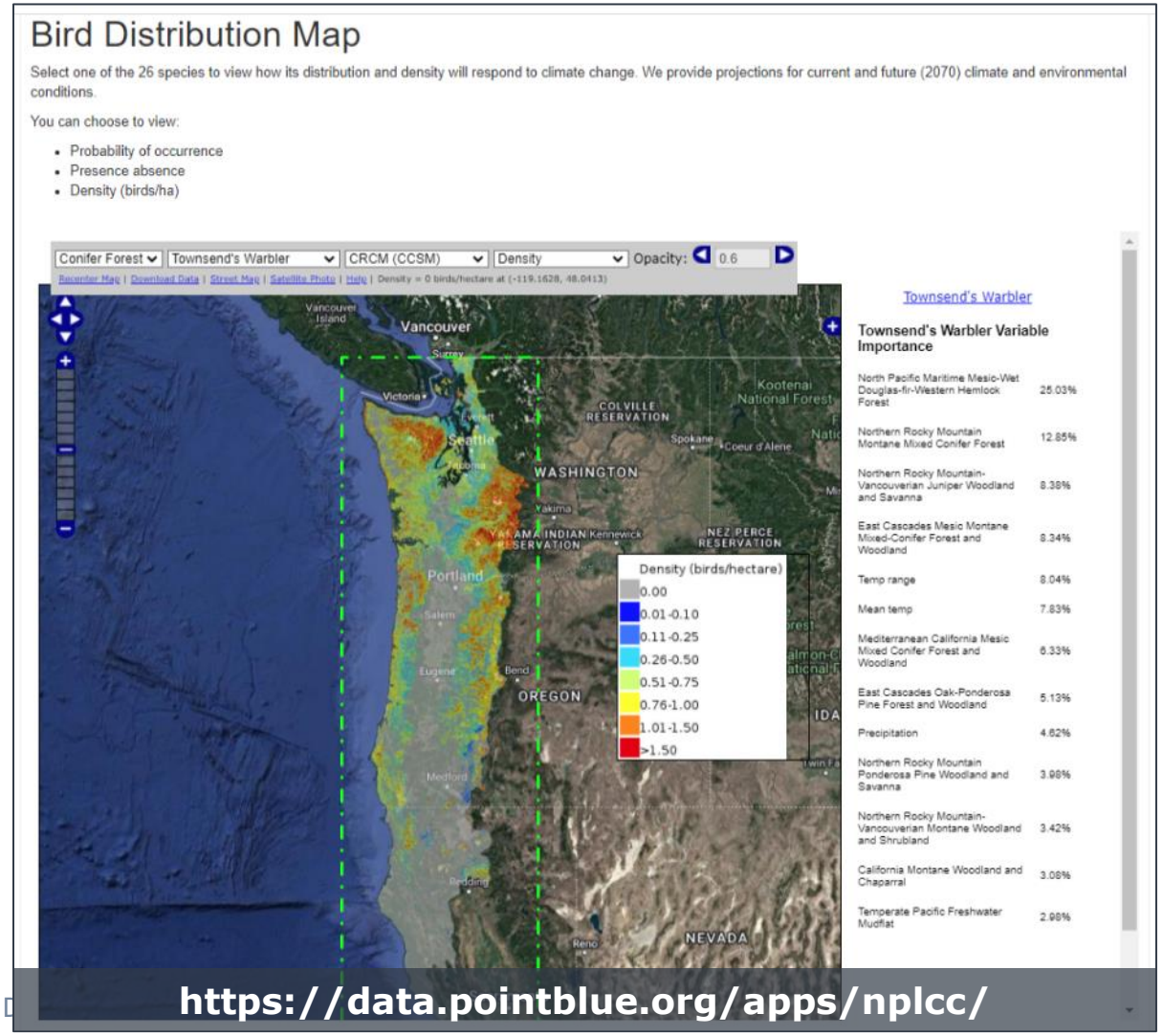
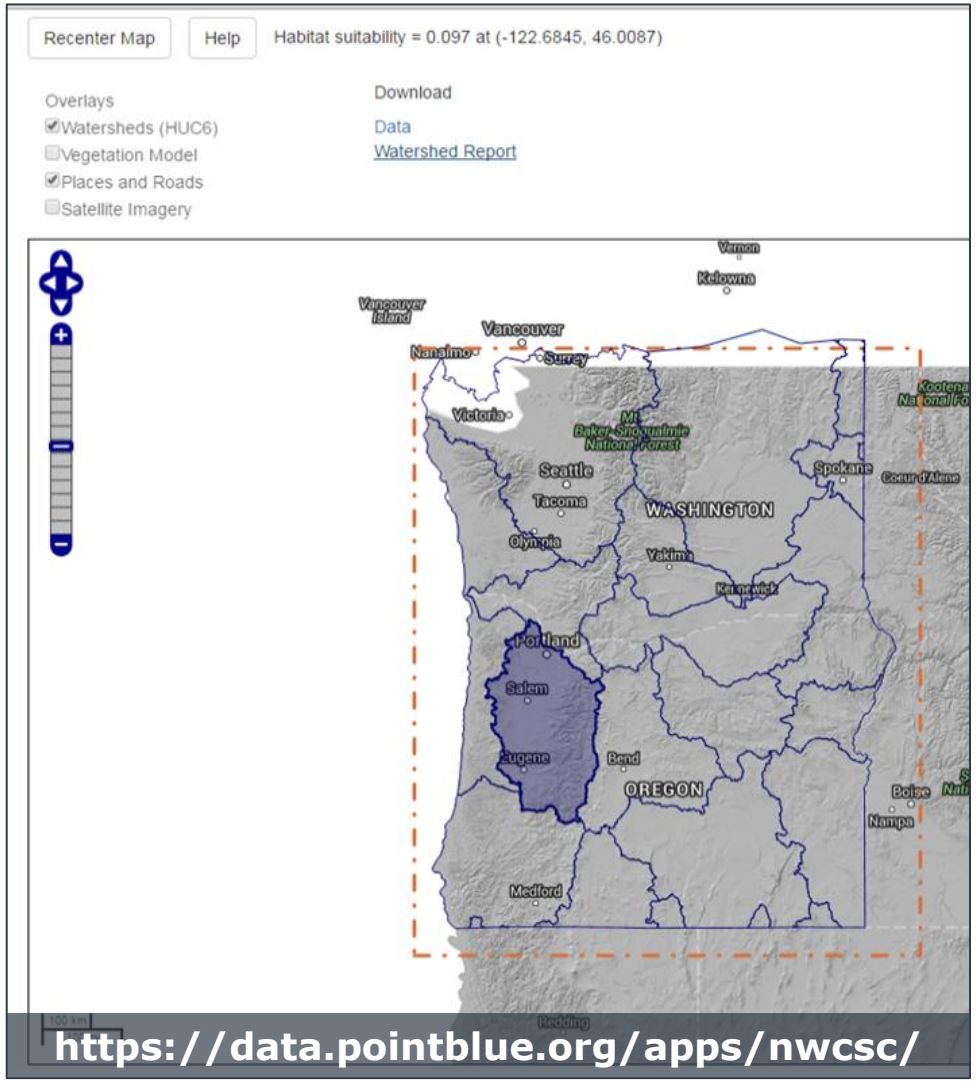


Photo (c)
Peter LaTourrette

INTERACTIVE WEB TOOLS



https://data.pointblue.org/apps/nplcc/



https://data.pointblue.org/apps/nwcsc/

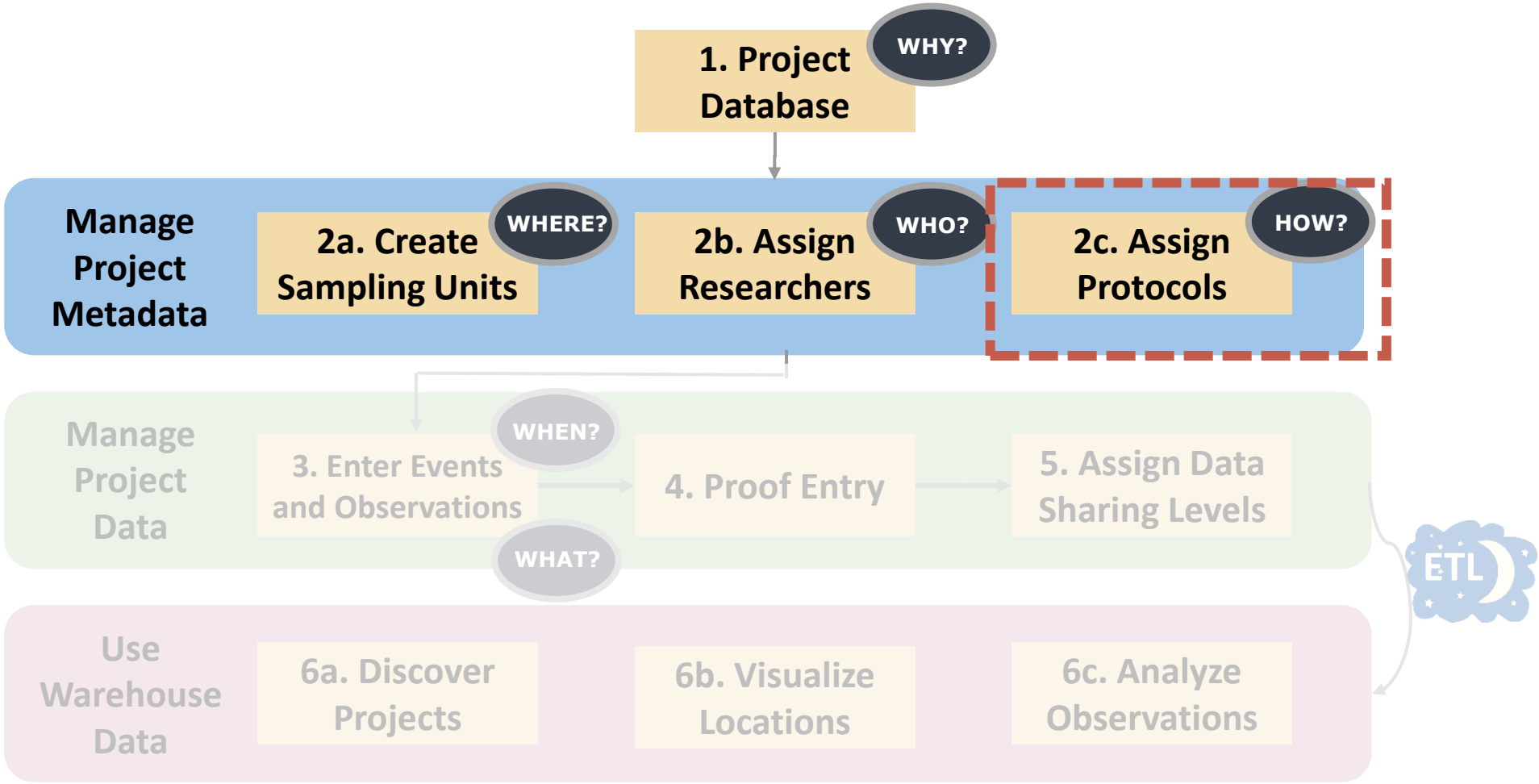
CASE STUDY:

BARRY M. GOLDWATER RANGE (BMGR), AZ

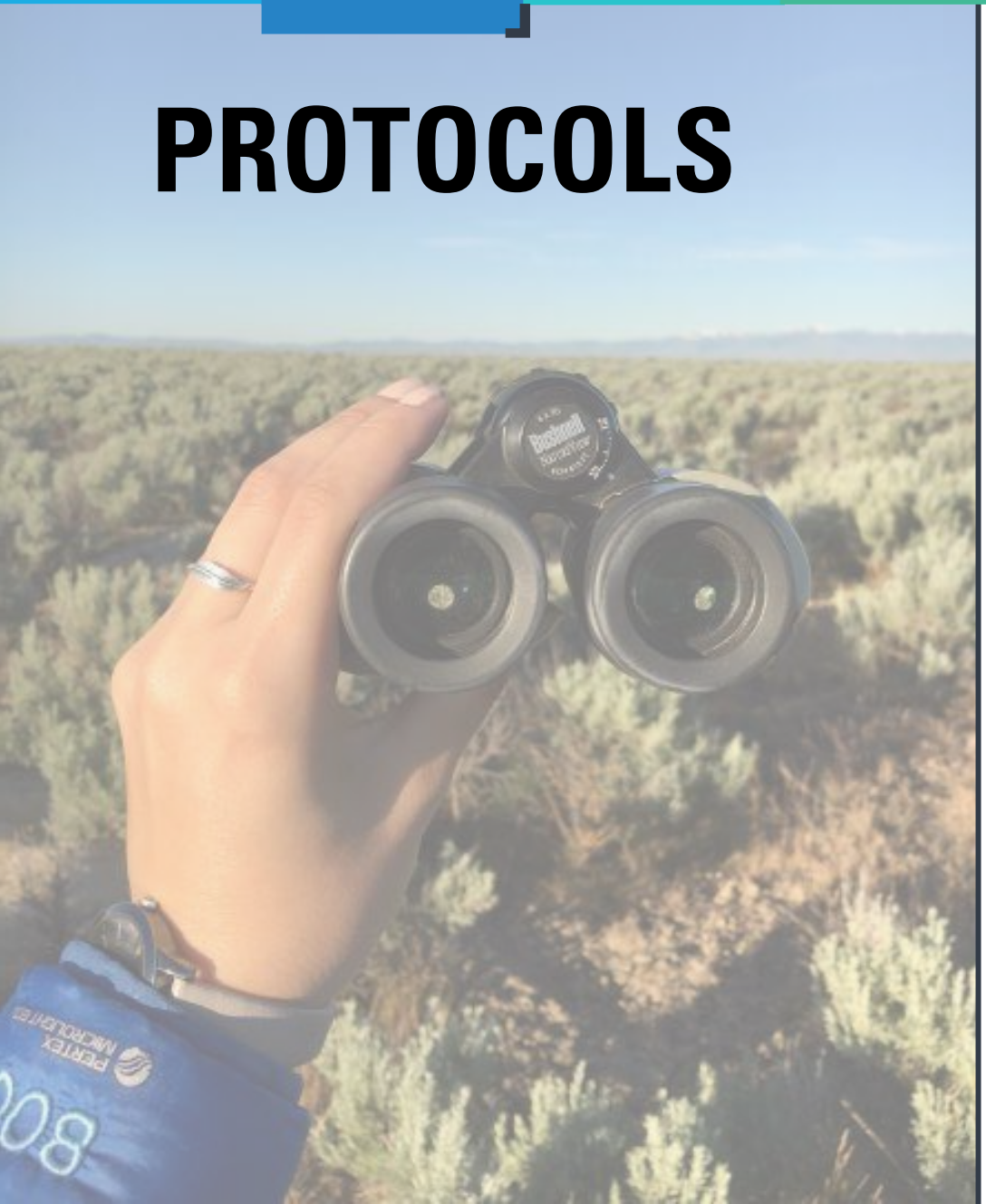
- Participating in Desert Thrasher Working Group
- Existing protocol in the AKN system
- Critical to add data to DoD-owned project
- Conducted surveys and entered data into BMGR project using desert thrasher data entry protocol available in AKN
- Shared data with thrasher initiative
- Data will show when querying DoD data for this species

Photo: Derek Hameister

MANAGING A PROJECT: PROTOCOLS



PROTOCOLS



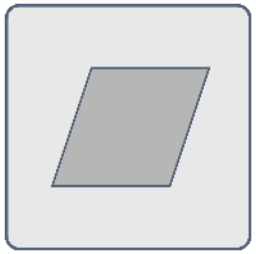
The *metadata* describing the methods and mechanics of **how** observations were collected

Should provide enough information for researcher 20 years from now to understand the methods you used

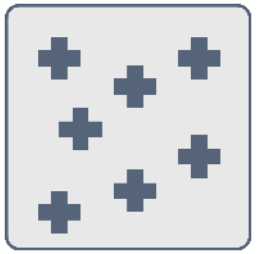
HOW?

2c. Assign Protocols

PRIMARY PROTOCOL TYPES



Area Search



Point Count

Linear Transect

Secretive Marshbird

Site Conditions

POINT COUNT PROTOCOLS

Duration of survey at each point

Time (binned)

Distance (binned or exact), maximum

Detection codes

Can include **breeding behavior**

Assumed **exhaustive** survey

Each animal **counted once**

HOW?

2c. Assign Protocols

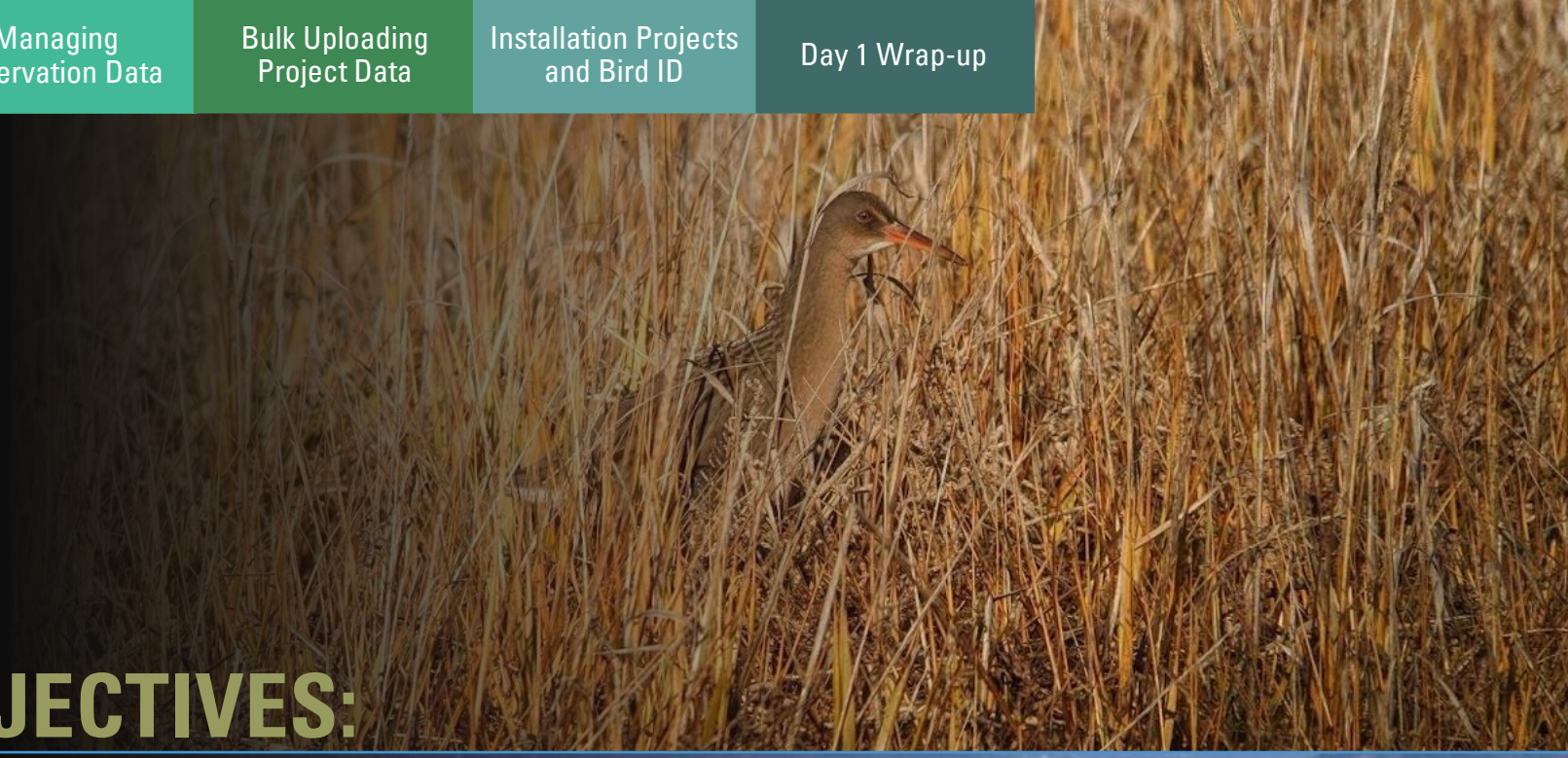
POINT COUNT PROTOCOL EXAMPLES

Compare how 3 field methodologies are represented:

Knutson (USFWS) protocol

Point Blue protocol

KBO protocol



CASE STUDY

HOW TO ACHIEVE CONFLICTING CONSERVATION OBJECTIVES:

THE IMPORTANCE OF STANDARD PROTOCOLS

ASSESSING RAIL RESPONSE TO MANAGEMENT: THE CHALLENGE

Coastal Conservancy

Avocet Research Associates

San Francisco Estuary Invasive Spartina Project

U.S. Fish & Wildlife Service — Department of the Interior

California Department of Fish&Game

Multi-partner Effort

Point Blue

DEVELOPING A STANDARD PROTOCOL

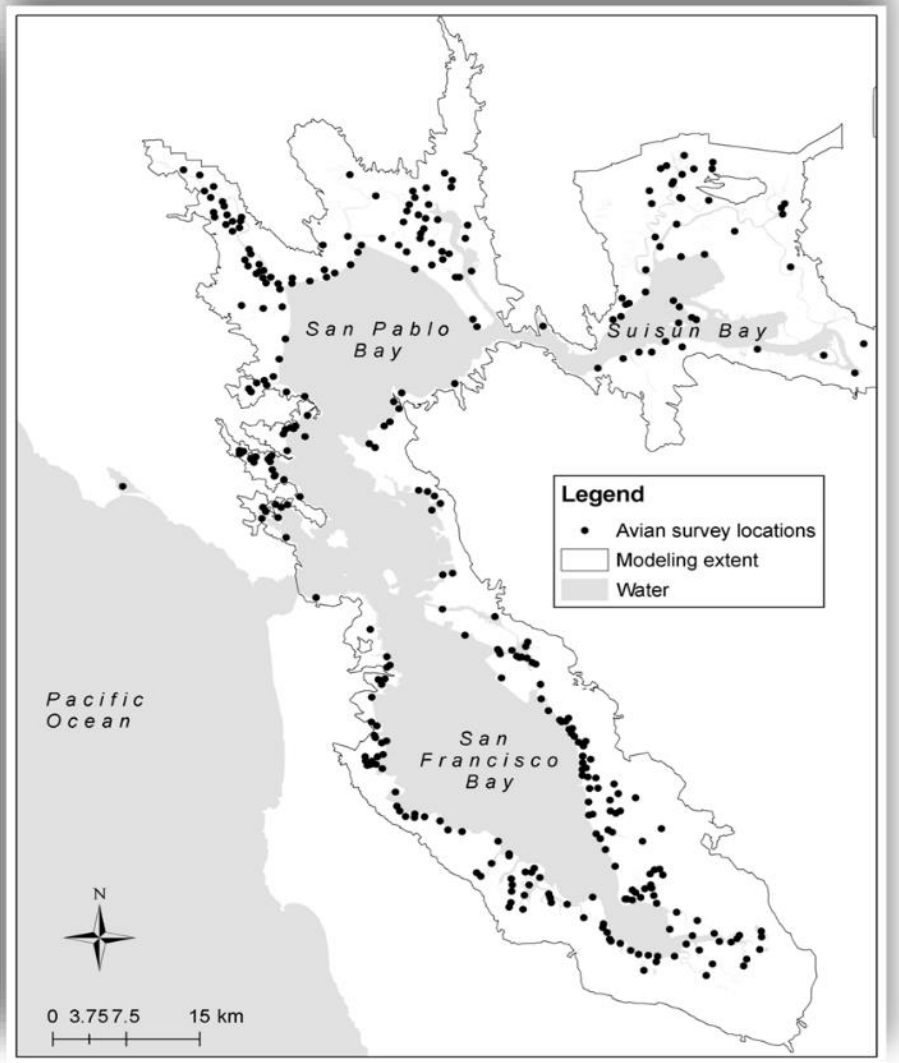
- North American Marsh Bird Protocol-SF Bay
  - 10 min broadcast point count
- Long-term dataset since 2005
- **All partner data in the AKN**


U.S. Fish and Wildlife Service
U.S. Department of the Interior
National Wildlife Refuge System
Point Blue Conservation Science

Site-specific Protocol for Monitoring Marsh Birds

Don Edwards San Francisco Bay and
San Pablo Bay National Wildlife Refuges

Survey ID Numbers: FF08RSFB00-003 and FF08RSNP00-008



Point Blue

CHOOSING PROTOCOLS (DEMONSTRATION)

Goal: select Point Count and Site Conditions protocols that match data sheet

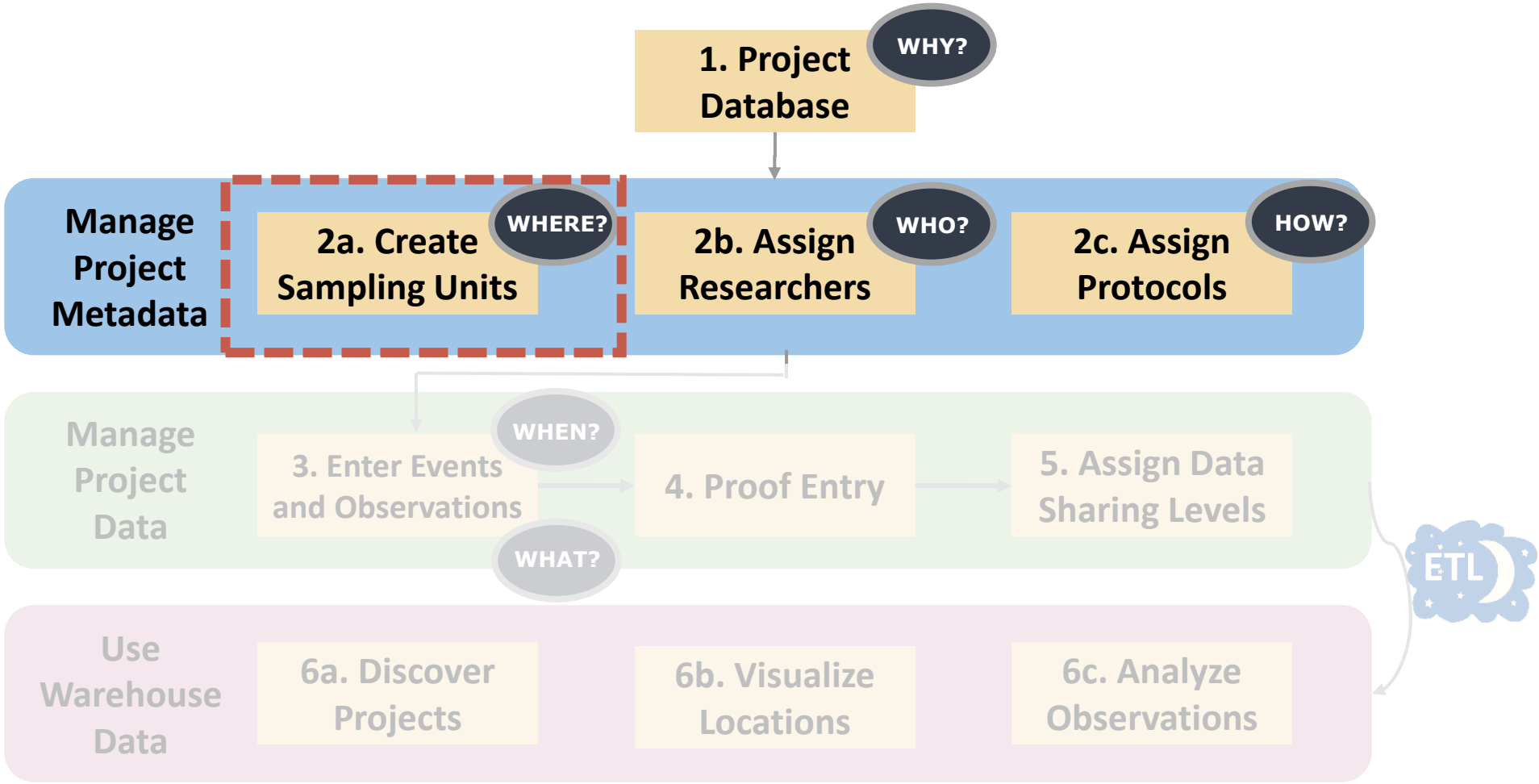
Tools:

- Our data sheet
- Protocol search tool
- Project Leaders for adding protocol to project

HOW?

2c. Assign Protocols

MANAGING A PROJECT: SAMPLING UNITS



SAMPLING UNITS

The locations where observations are collected

Organized into a tree (hierarchy)

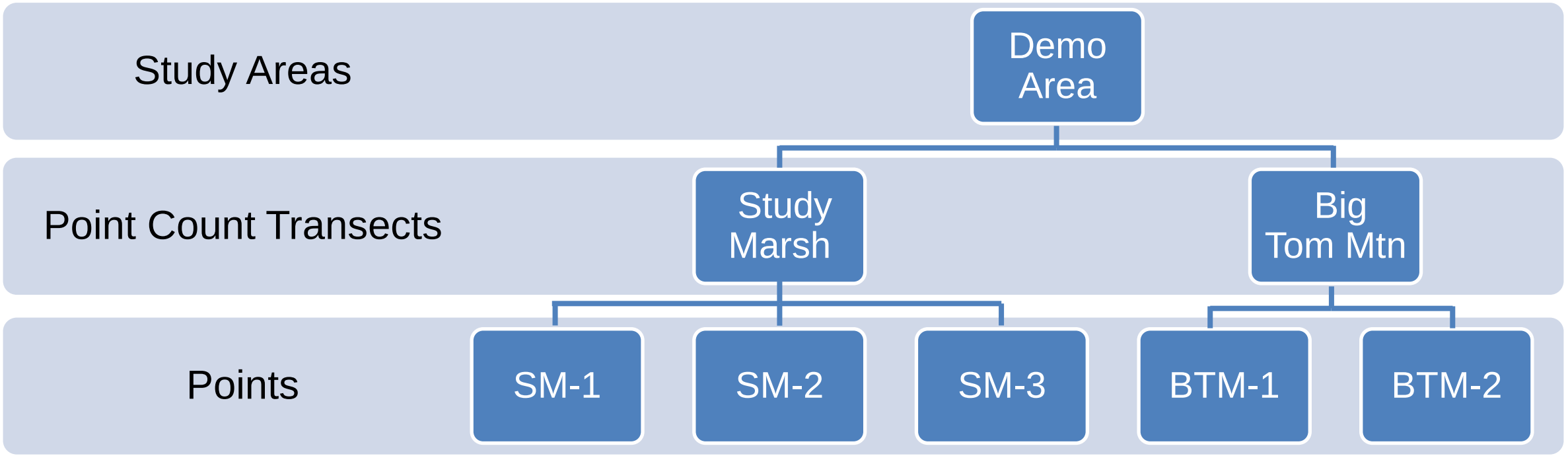
Uniquely named with Project

Can have Point/Line/Polygon

2a. Create Sampling Units

SAMPLING UNIT TYPES FOR POINT COUNTS

Project: DOD_DEMO

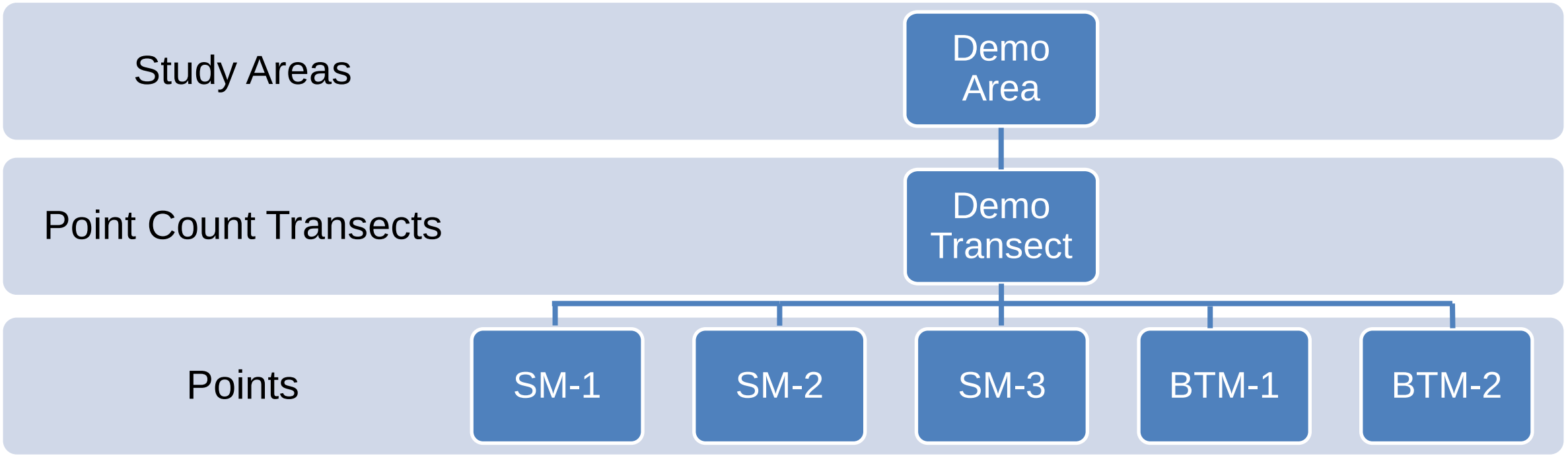


Replicates or independent points?
What questions are you asking?

WHERE?
2a. Create Sampling Units

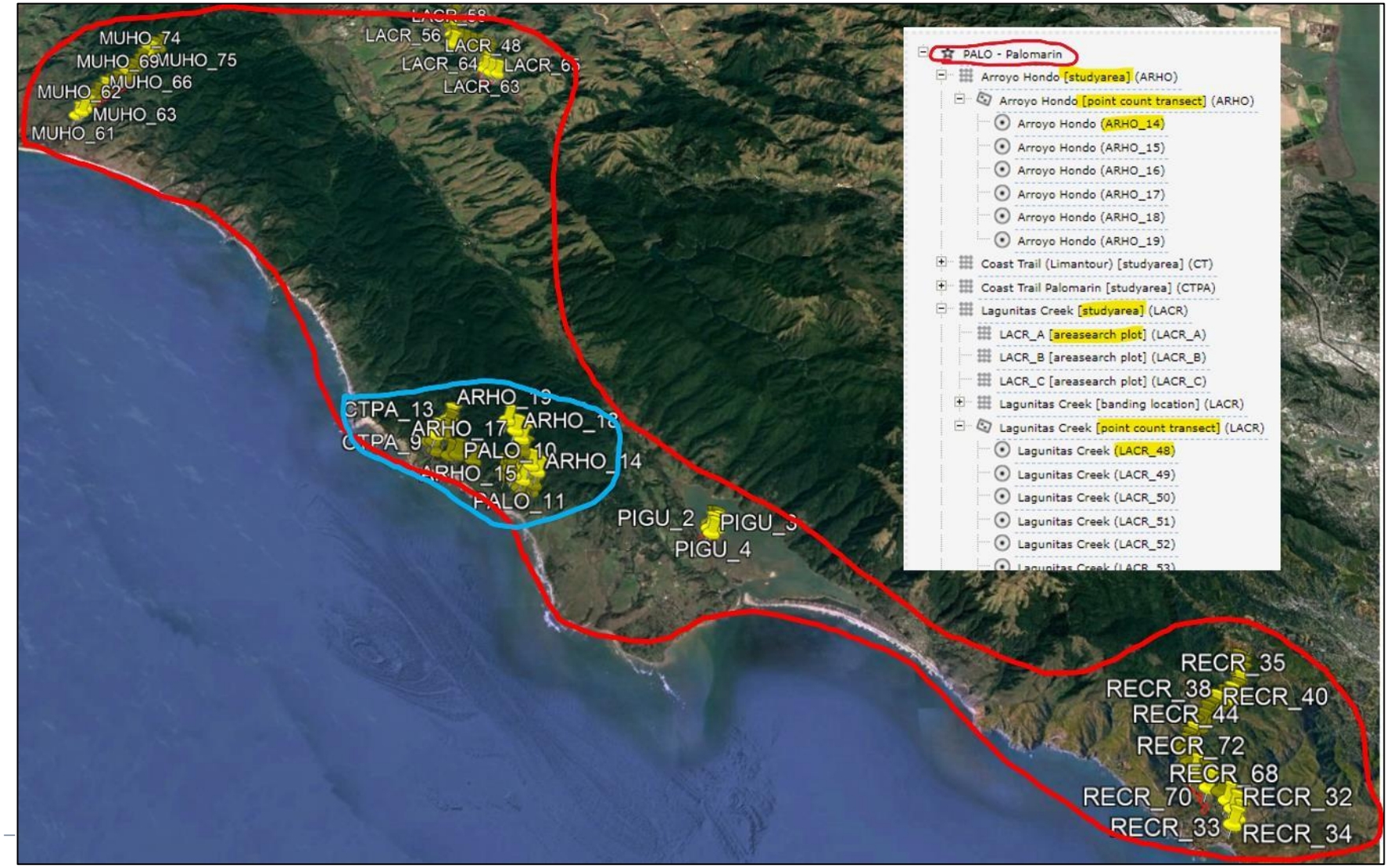
SAMPLING UNIT TYPES FOR POINT COUNTS

Project: DOD_DEMO

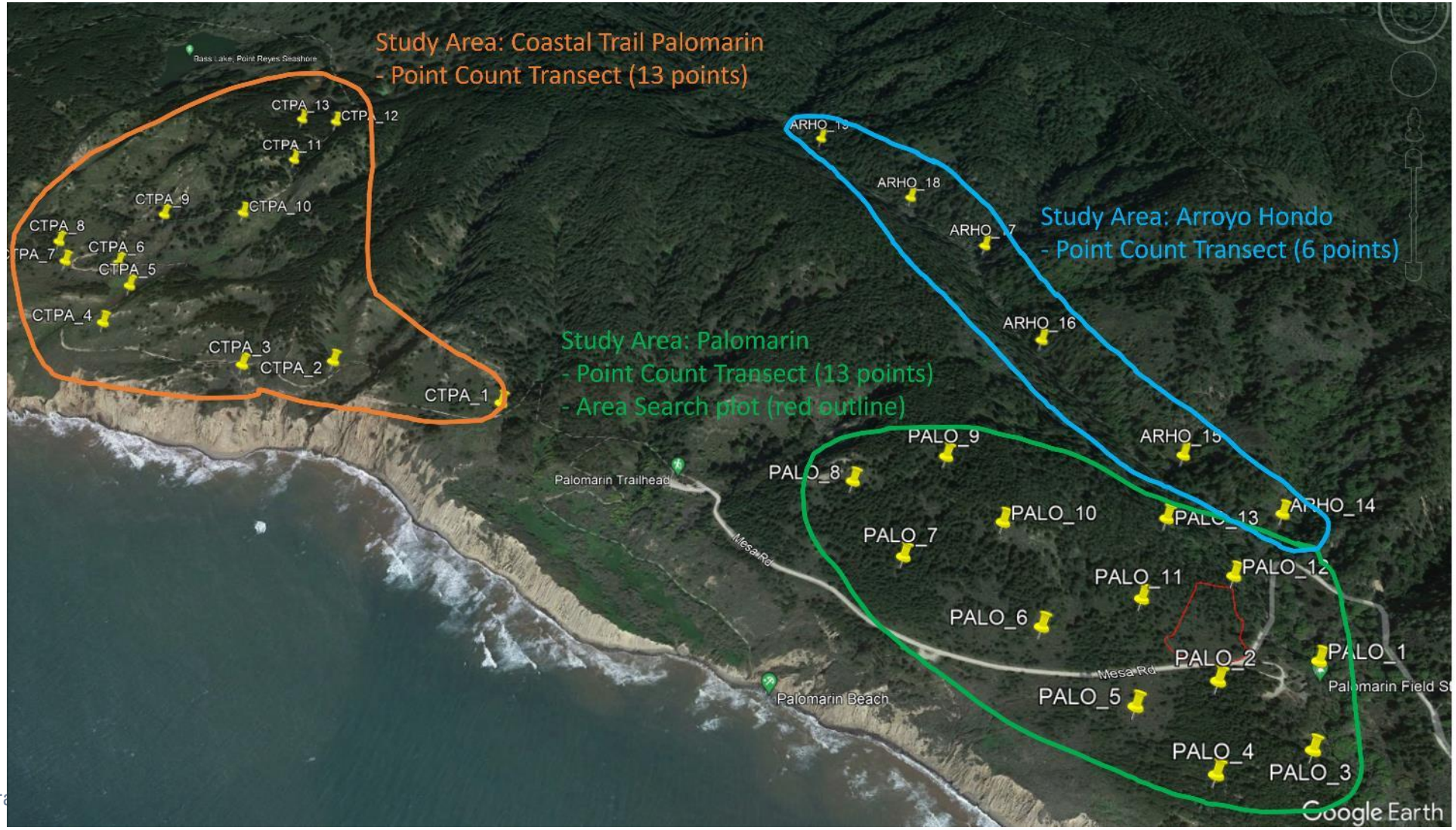


Replicates or independent points?
What questions are you asking?

SAMPLING UNIT TYPES FOR POINT COUNTS



SAMPLING UNIT TYPES FOR POINT COUNTS



MANAGING PROJECT METADATA

EXERCISE 1: CREATE SAMPLING UNITS

CREATE SAMPLING UNITS
EXERCISE 1

Purpose: Learn how to create a sampling unit hierarchy within a project to support a point count survey

Goal: Create a new point count transect with one point under your service branch's Study Area (e.g., Navy) in the "DOD_DEMO" Project

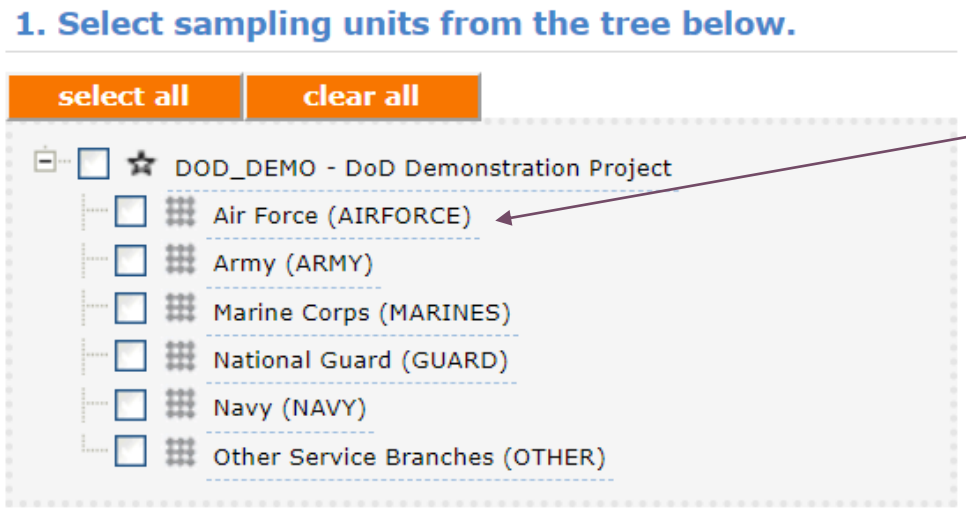
Project: DOD_DEMO

CREATE SAMPLING UNITS
EXERCISE 1 *(THINKING AHEAD)*

- Consider how you might organize your data
  - Study Areas can be based on survey type rather than geography:
    - Ex- Study Area 1: multi-species point counts
    - Ex- Study Area 2: burrowing owl surveys
  - Only group points together in the same transect if they are part of the same survey (geographically grouped and collected on the same day)
  - Consider how you might name your study locations based on geographic features and numbers. (e.g., Emerald Hills 1, Alpha Maneuver Area 3)
  - Remember the hierarchy for point counts is **Study Area → Transect → Point(s)**
- We will be building on this exercise later! Think about how your naming strategy can scale as you add surveys and points.

CREATE SAMPLING UNITS
EXERCISE 1

Reminder about Study Areas: In the project DOD_DEMO, your STUDY AREA is your service branch. The name is listed first, followed by the short name in parentheses.



For example, this Study Area Name is Air Force, and the Study Area Short Name is AIRFORCE

2a. Create Sampling Units WHERE?

CREATE SAMPLING UNITS
EXERCISE 1

Exercise 1 instructions

LONG NAME VS SHORT NAME:
WHAT'S THE DIFFERENCE?

- Every sampling unit has a **Short Name** and a **Long Name**
  - Short Names and Long Names can be the same
- **Short Name** + **Long Name** combinations must be unique within an AKN Project
  - e.g., transect names and point count names **CAN NOT BE THE SAME**
- **Short Names** will be seen throughout the tools and in your data download
  - It is the shorthand name for each sampling unit
- **Short Names** are limited to 12 characters
- **Long Names** can be longer and more descriptive, if useful

LONG NAME VS SHORT NAME:
WHAT'S THE DIFFERENCE?

EXAMPLES (any of these would be correct):

Point Count Transect Long Name	Point Count Transect Short Name
East Training Area	ETA
East Training Area 1	ETA-1
ETA	ETA
ETA-1	ETA-1

BREAK (15 MINS)

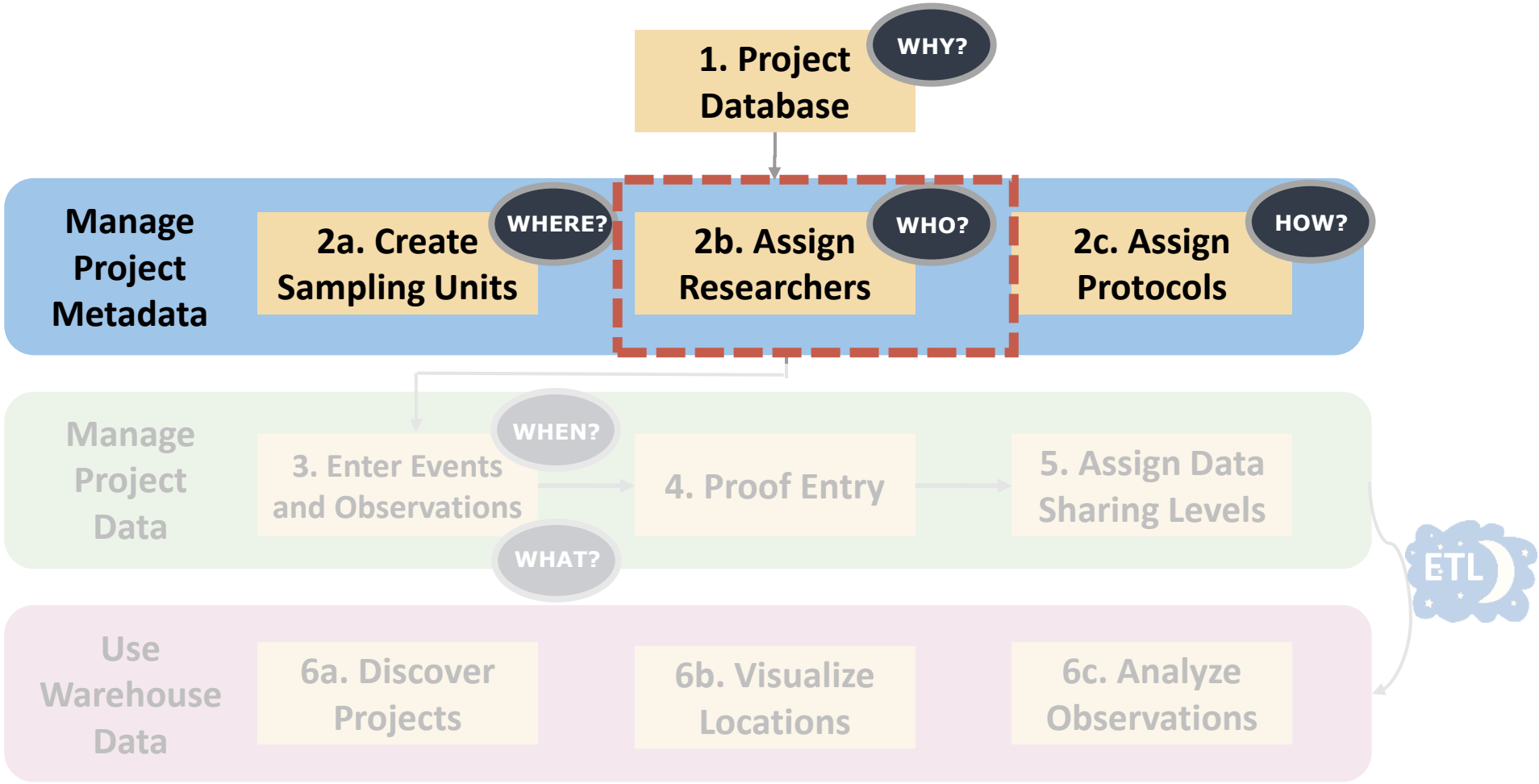
NEXT: DOWNLOADING SAMPLING UNITS

DOWNLOAD SAMPLING UNITS DEMONSTRATION

Download sampling units:

- Project Leaders for download sampling unit locations to GPS, GIS and more

MANAGING A PROJECT: RESEARCHERS



RESEARCHERS

People identified in a Project for getting access and/or who made observations

Created by user registration (for active users) or manual entry (for historical data)

2b. Assign Researchers

WHO?

RESEARCHER TYPES

Project Leader: the data owner, has full control over data, metadata, and who gets Project access

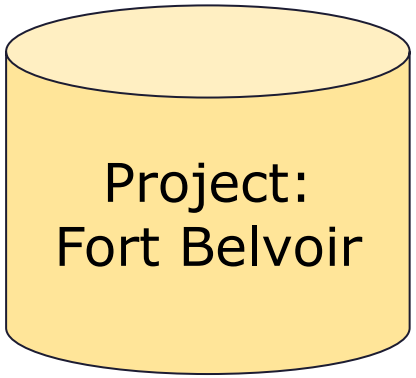
Biologist: can enter and review data in the Project

2b. Assign Researchers

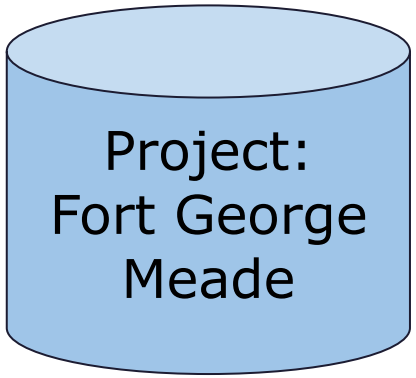
WHO?

RESEARCHERS & PROJECT ACCESS

Access Project assigned by Project Leader



Jane: Project Leader
Mike: Biologist
Pat: Biologist



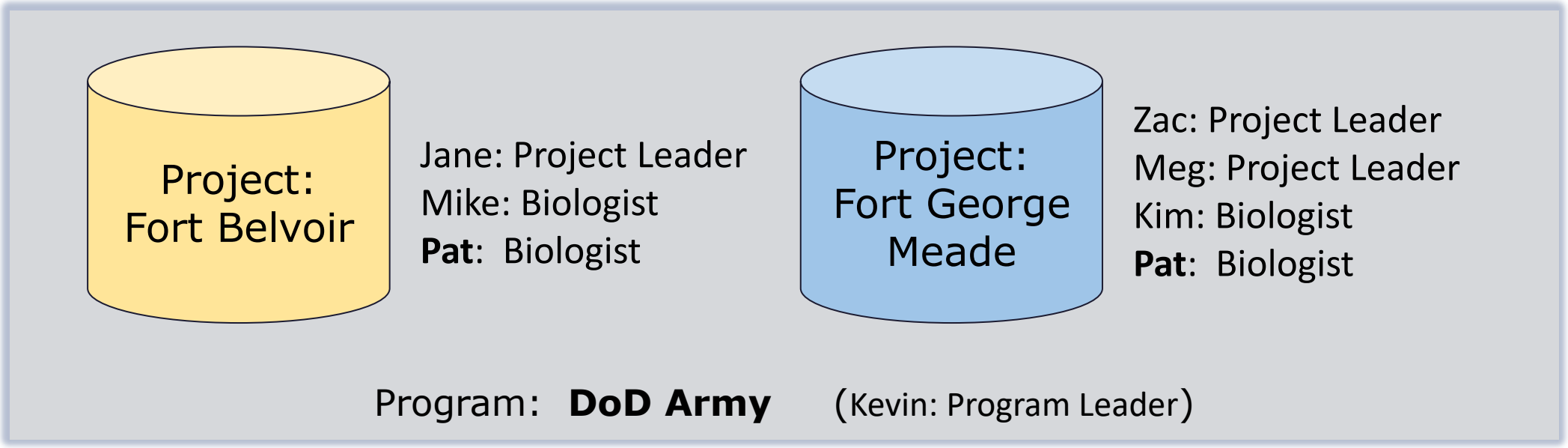
Zac: Project Leader
Meg: Project Leader
Kim: Biologist
Pat: Biologist

2b. Assign Researchers WHO?

RESEARCHERS & PROJECT ACCESS

DoD will also have a Program Leader

(managed by Point Blue staff w/ guidance from DoD leadership)



2b. Assign Researchers

WHO?

ADDING RESEARCHERS DEMONSTRATION

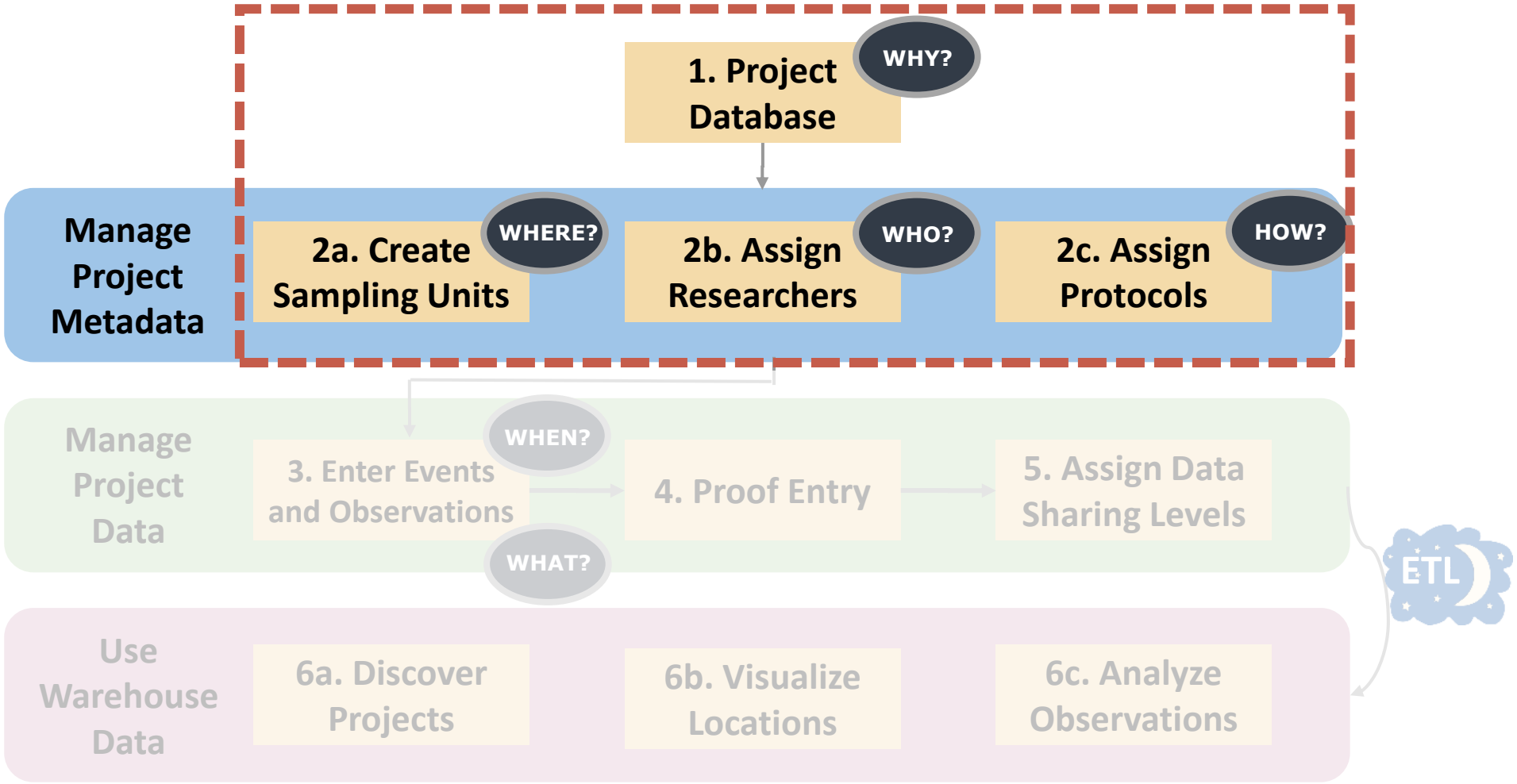
Tools:

- Biologists for adding researchers to Project

2b. Assign Researchers

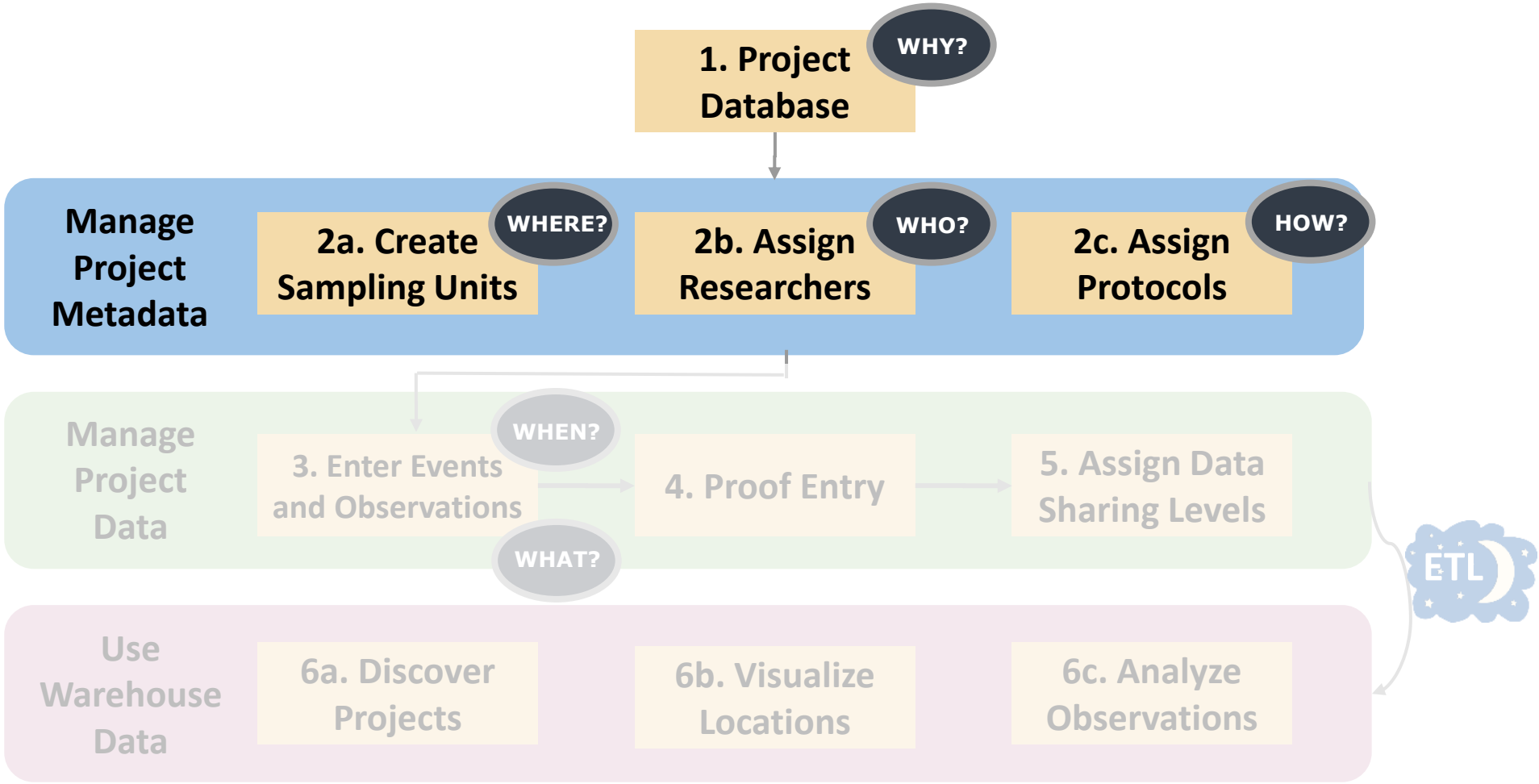
WHO?

QUESTIONS ON MANAGING PROJECT METADATA?

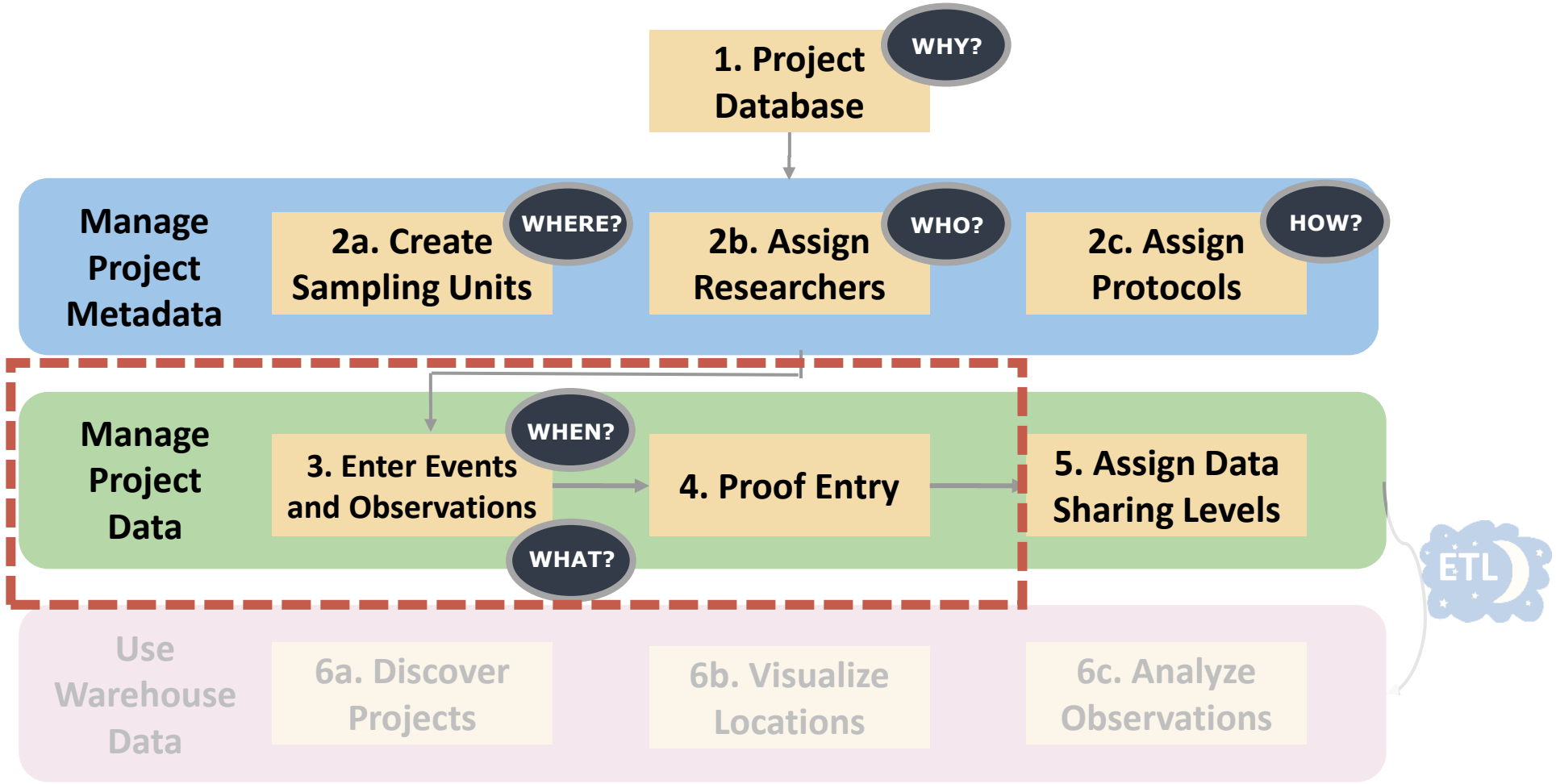


MANAGING OBSERVATION DATA

WORKFLOW FOR MANAGING A PROJECT



MANAGING A PROJECT: OBSERVATION DATA



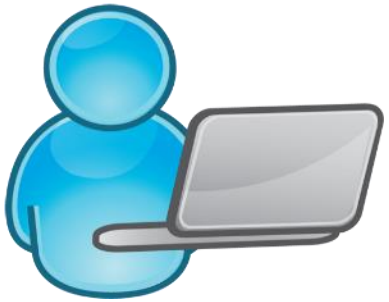
SAMPLING EVENTS AND OBSERVATIONS

Event: survey at a Sampling Unit using a Protocol by Researcher at a specific date and time

Observation: one or more individuals of a single species detected during an Event

REVIEW LEVELS FOR EACH EVENT

Steps to enter and review data in preparation for sharing



Project Biologist enters a new event and observations

Event is **RAW**

Data entered

Event is **CLEAN**

Data 1st review by Biologist

Event is **AVAILABLE**

Data final review

Event is **RESTRICTED**

Data final review and not to be shared

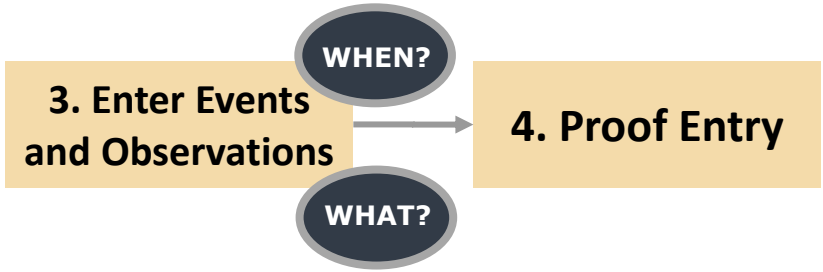
MANAGING OBSERVATION DATA

EXERCISE 2: ENTER & PROOF POINT COUNT EVENT

ENTER & PROOF POINT COUNT EVENT
EXERCISE 2

Purpose: Learn how to enter survey data and site conditions in Biologists and proof those data

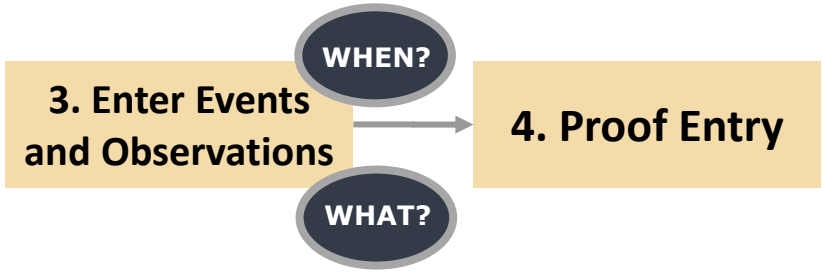
Goal: Enter the sample data for the sampling unit you created in Exercise 1, save it, and proof those data



ENTER & PROOF POINT COUNT EVENT

EXERCISE 2 *(THINKING AHEAD)*

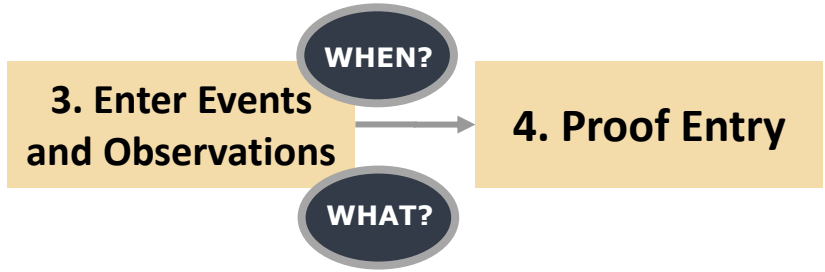
- Data marked Clean through proofing will load into the data warehouse, making it available to analysis tools
- As Project Leader, you will:
  - Grant users who collect data access to Biologists to enter and proof their own data
  - Add protocols to the project and manage sampling units



ENTER & PROOF POINT COUNT EVENT
EXERCISE 2

Exercise 2 instructions

- It is okay not to follow data sheet exactly



DOWNLOAD POINT COUNT OBSERVATION DATA FROM PROJECT

DEMONSTRATION

Tools:

- Project Leaders for download observations from our Project

CASE STUDY:

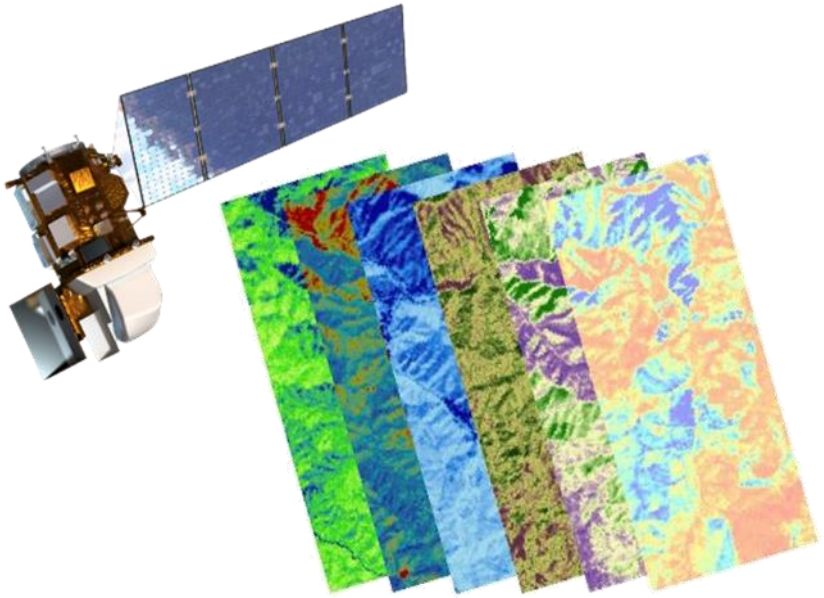
USFS REGION 8, MULTI-PARTNER

- 30-year dataset at-risk -- 13,664 sampling locations
- 1,121,654 point count observation records saved (!!)
- 364,574 site condition records archive
- Innovated -- XML scripts to capture all data field
- Data has been uploaded and a data entry system has been created

CASE STUDY:

SPECIES-CENTERED HABITAT MODELING

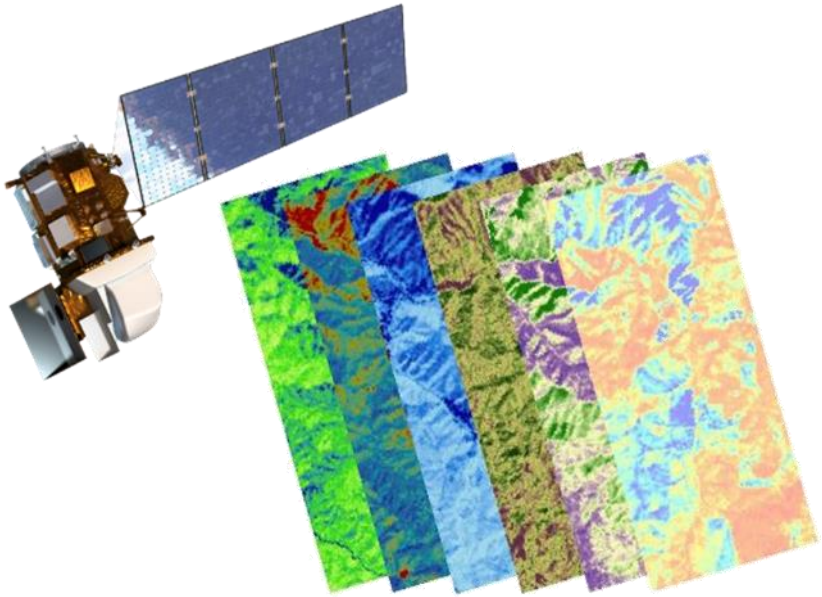
(Shirley et al 2013, Betts et al 2014, Halstead et al 2019)



CASE STUDY:

SPECIES-CENTERED HABITAT MODELING

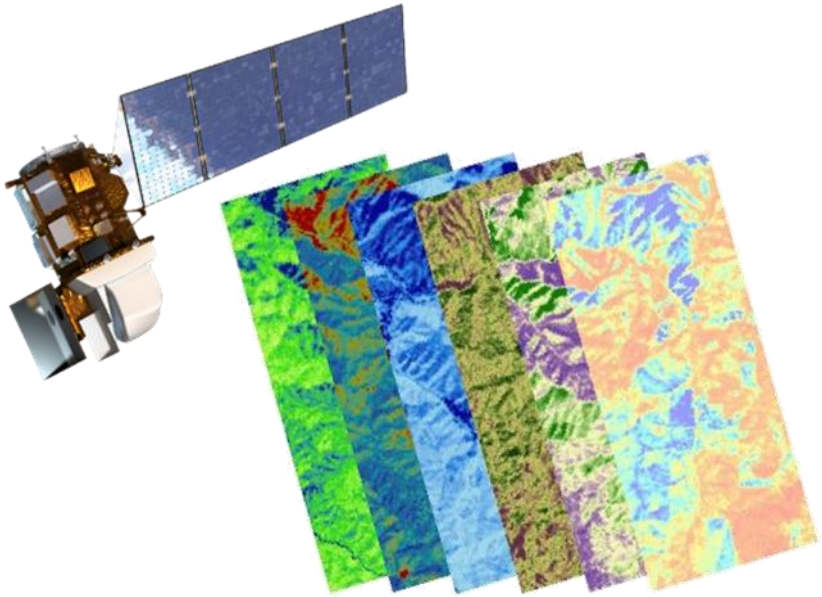
(Shirley et al 2013, Betts et al 2014, Halstead et al 2019)

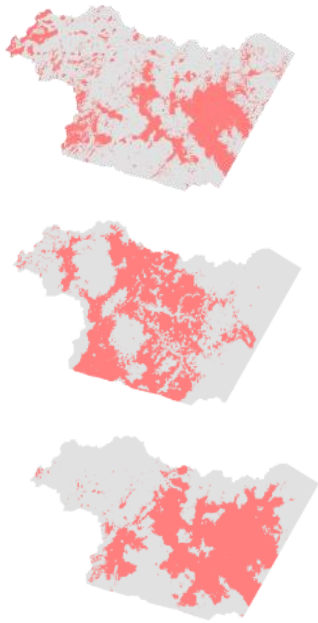


CASE STUDY:

SPECIES-CENTERED HABITAT MODELING

(Shirley et al 2013, Betts et al 2014, Halstead et al 2019)

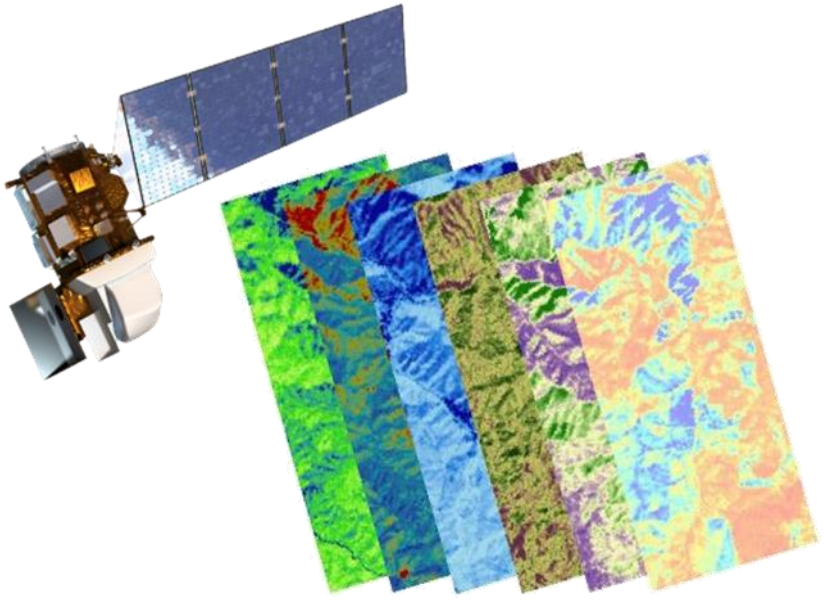


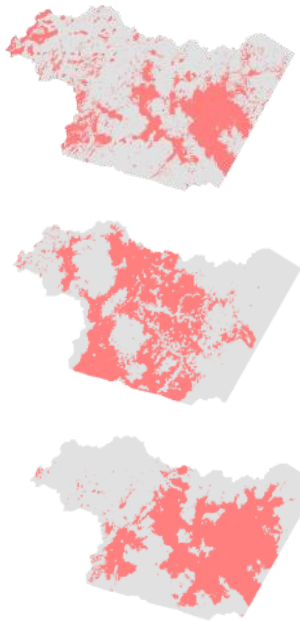


CASE STUDY:

SPECIES-CENTERED HABITAT MODELING

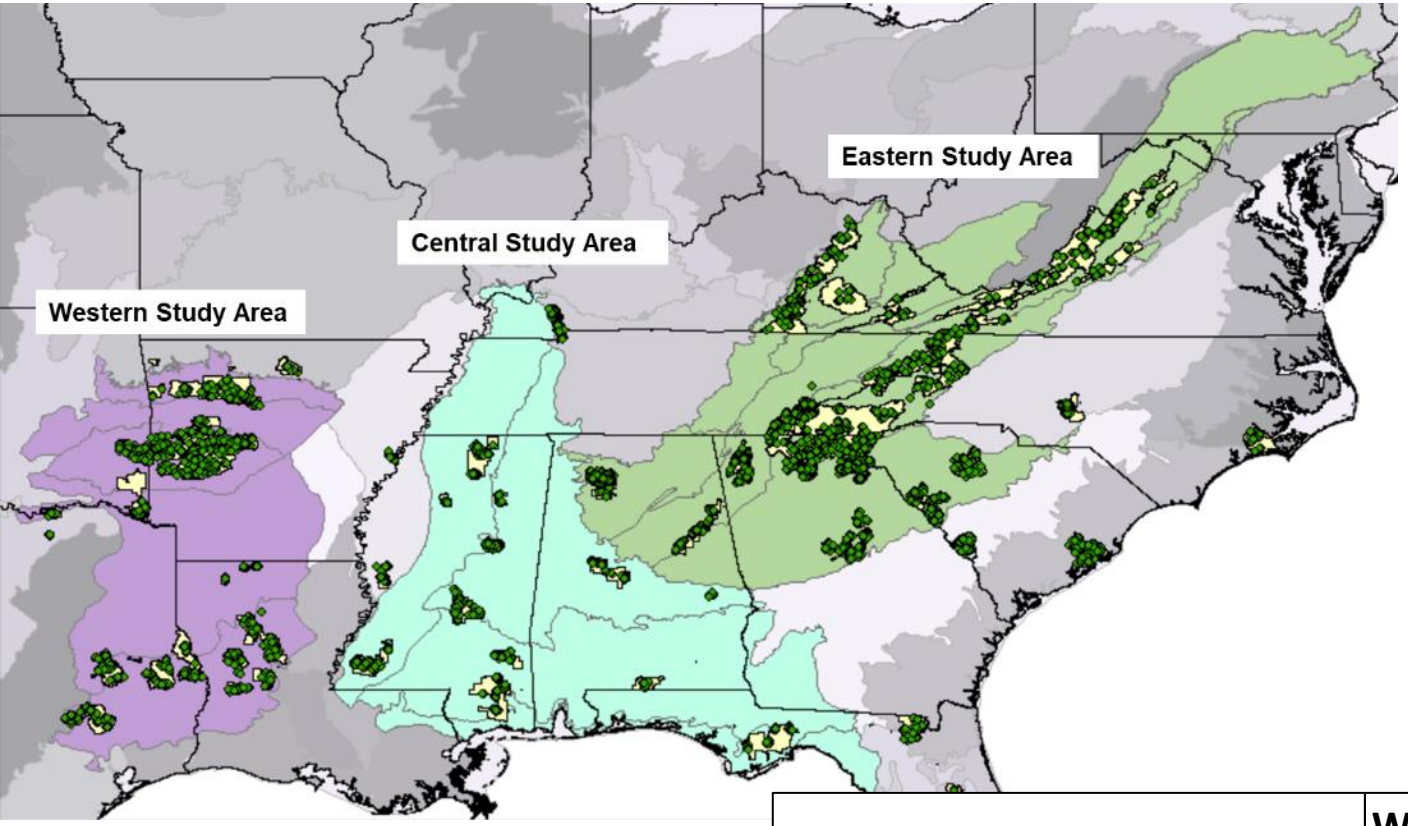
(Shirley et al 2013, Betts et al 2014, Halstead et al 2019)





Compared to Land Cover Derived Models:

- High prediction ability
- Wider temporal range
- Avoid uncertainty:
  - misclassification of habitats
  - omission of fine-scale features
  - subtle changes in vegetation

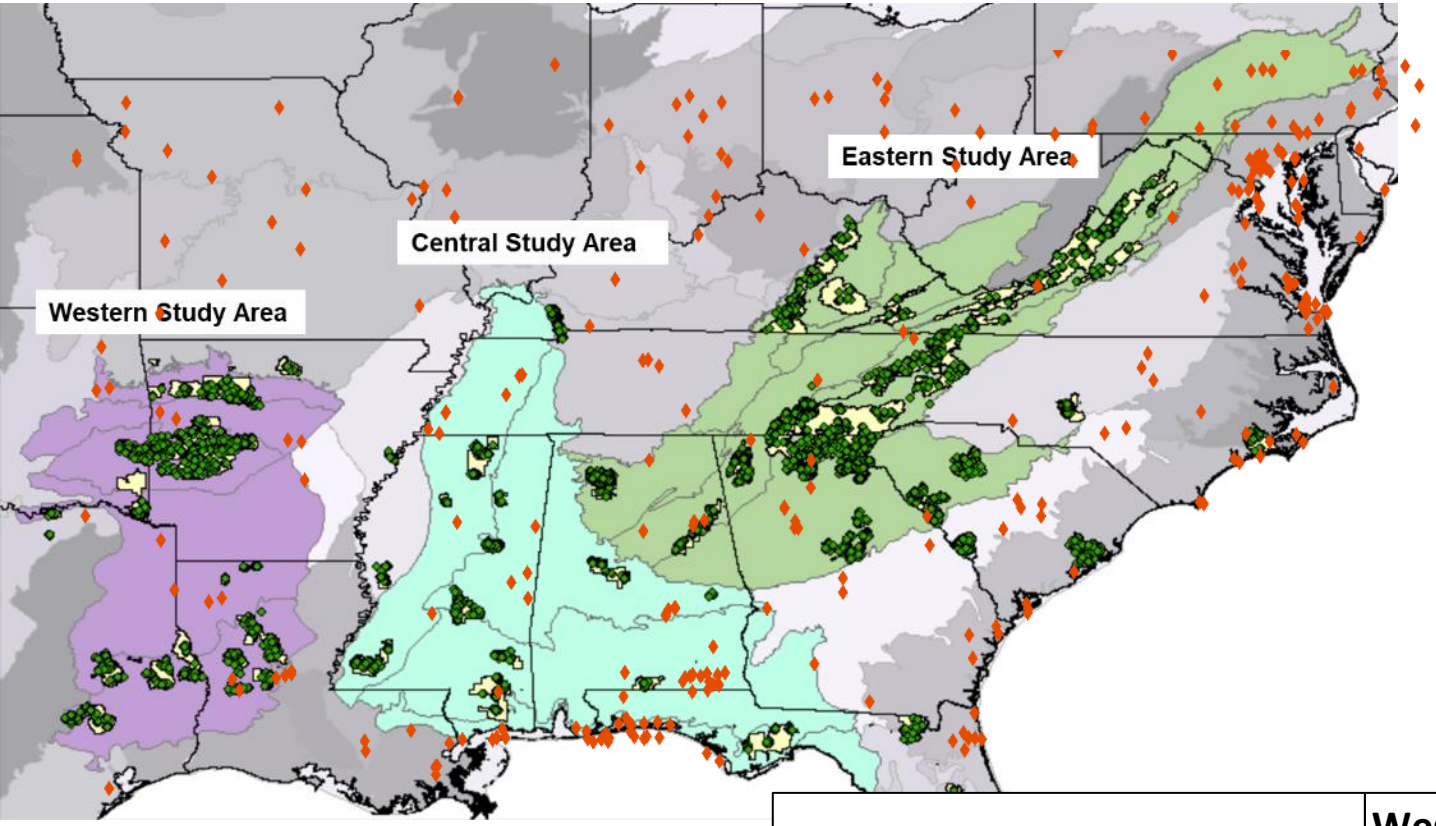


CASE STUDY:

SPECIES-CENTERED HABITAT MODELING

(Shirley et al 2013, Betts et al 2014, Halstead et al 2019)

	Western Study Area	Central Study Area	Eastern Study Area
Number of final survey points	963	1068	3181
Number of species modeled	48	52	66
Number of species >= AUC 0.55	35	36	51
Mean AUC for final models	0.628	0.630	0.628
St. dev. AUC for final models	0.054	0.073	0.067



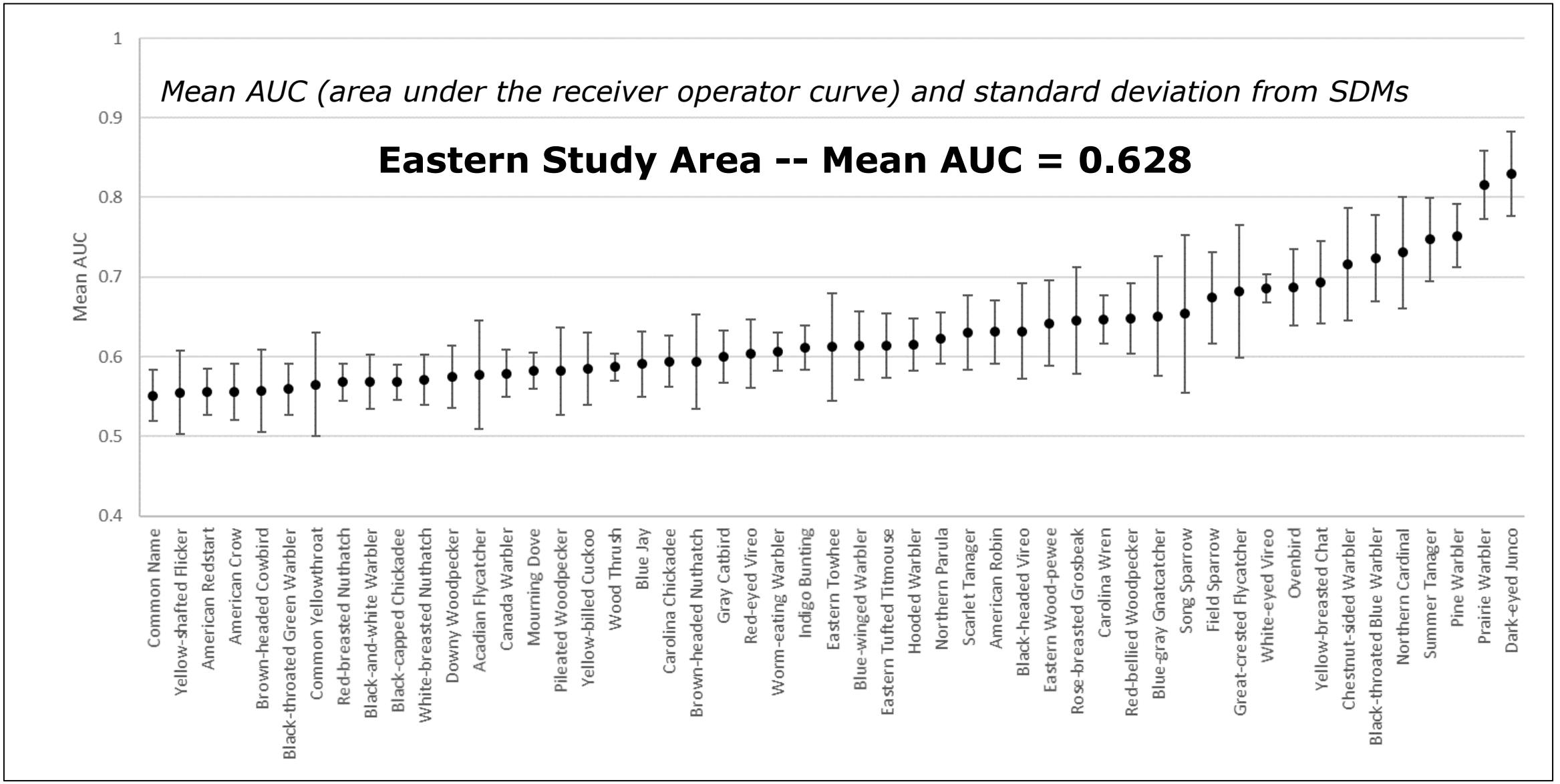
CASE STUDY:

SPECIES-CENTERED HABITAT MODELING

(Shirley et al 2013, Betts et al 2014, Halstead et al 2019)

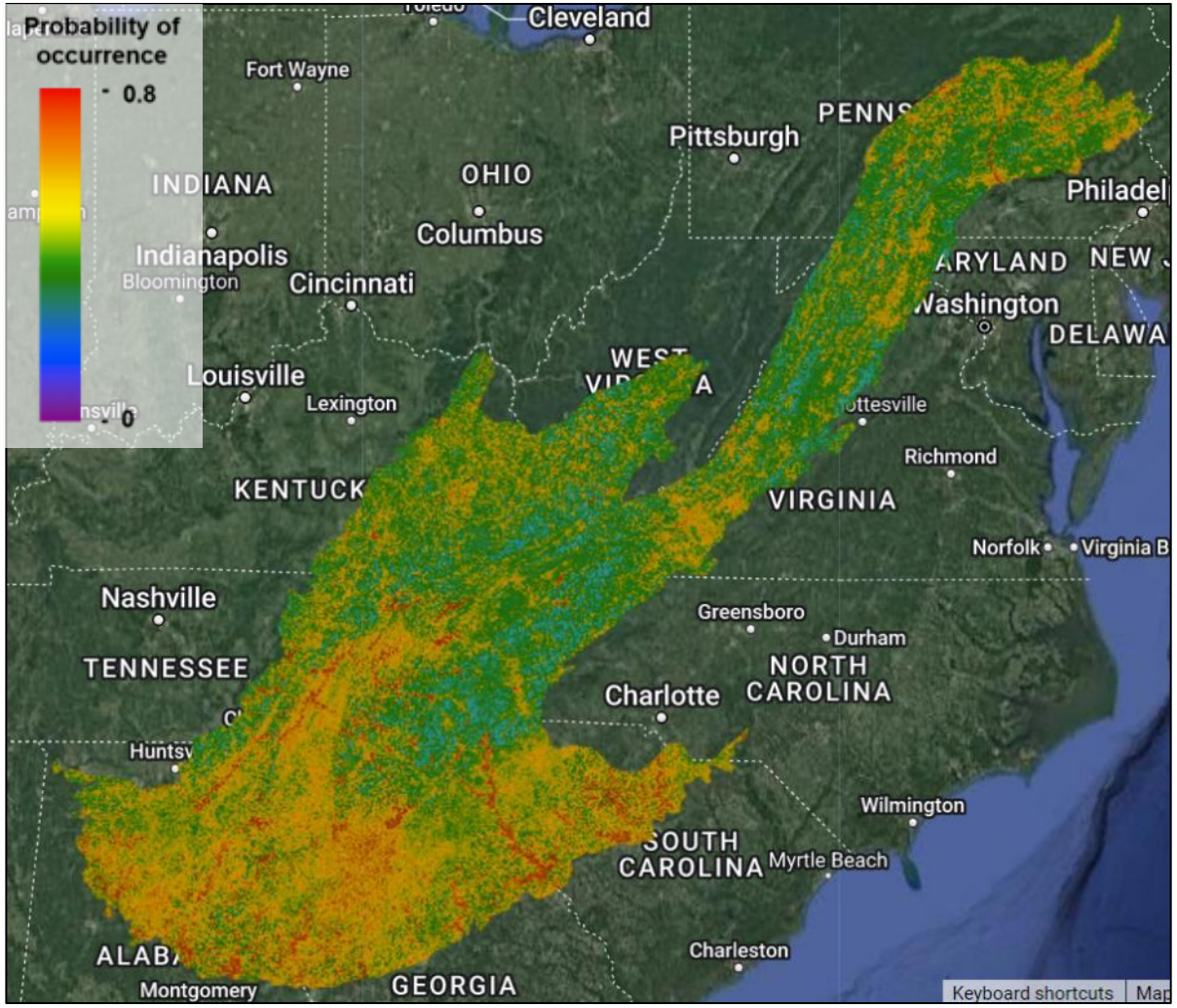
DoD Installation

	Western Study Area	Central Study Area	Eastern Study Area
Number of final survey points	963	1068	3181
Number of species modeled	48	52	66
Number of species >= AUC 0.55	35	36	51
Mean AUC for final models	0.628	0.630	0.628
St. dev. AUC for final models	0.054	0.073	0.067


Mean AUC (area under the receiver operator curve) and standard deviation from SDMs
Eastern Study Area -- Mean AUC = 0.628
Mean AUC
1
0.9
0.8
0.7
0.6
0.5
0.4
Common Name
Yellow-shafted Flicker
American Redstart
American Crow
Brown-headed Cowbird
Black-throated Green Warbler
Common Yellowthroat
Red-breasted Nuthatch
Black-and-white Warbler
Black-capped Chickadee
White-breasted Nuthatch
Downy Woodpecker
Acadian Flycatcher
Canada Warbler
Mourning Dove
Pileated Woodpecker
Yellow-billed Cuckoo
Wood Thrush
Blue Jay
Carolina Chickadee
Brown-headed Nuthatch
Gray Catbird
Red-eyed Vireo
Worm-eating Warbler
Indigo Bunting
Eastern Towhee
Blue-winged Warbler
Eastern Tufted Titmouse
Hooded Warbler
Northern Parula
Scarlet Tanager
American Robin
Black-headed Vireo
Eastern Wood-pewee
Rose-breasted Grosbeak
Carolina Wren
Red-bellied Woodpecker
Blue-gray Gnatcatcher
Song Sparrow
Field Sparrow
Great-crested Flycatcher
White-eyed Vireo
Ovenbird
Yellow-breasted Chat
Chestnut-sided Warbler
Black-throated Blue Warbler
Northern Cardinal
Summer Tanager
Pine Warbler
Prairie Warbler
Dark-eyed Junco

CASE STUDY:

PINE WARBLER HABITAT DISTRIBUTION -- 2019



BULK UPLOADING METADATA & OBSERVATION DATA INTO A PROJECT

BULK LOADING DATA

Loading spreadsheet data into the Project Database for loading Researchers, Sampling Units, and Observations

Observations: Uses definition file to describe how your spreadsheet maps into AKN

BATCH PROCESSING

Bulk Uploader V2 - Beta

Follow the steps below to load data in bulk into your project.

First, select the Project you want to bulk load into

FORT_HOOD - [DOD_ARMY] Fort Hood

Next, select the Tool you want to use

Each tool independently does a task that helps you bulk load data into your project. Many of the tools process data in Batch, processing dat
results can be found in the Batches tool.

Add Researchers | Add Sampling Units | Add Observations | Add Protocol | Batch

Results:

Batches for project FORT_HOOD

The table is showing all batches for this project. Click on a row to get the batch result details when Status is success or

Save as CSV | Refresh list

ID	Utility	Status	Status Detail	Submi	
455	AddSamplingUnits	success	batch completed successfully	2021-08-10 20:07:48	0:01
454	AddSamplingUnits	error	batch completed with errors	2021-08-10 20:06:33	0:00
453	AddObservations	success	batch completed successfully	2021-08-09 19:25:10	1:03
452	AddObservations	error	batch completed with errors	2021-08-09 19:24:41	0:04
451	AddObservations	error	batch completed with errors	2021-08-09 19:23:19	0:09
450	AddObservations	error	batch completed with errors	2021-08-09 19:18:37	0:04
449	AddObservations	error	batch completed with errors	2021-08-09 19:03:35	0:03
448	AddObservations	error	batch completed with errors	2021-08-09 19:00:23	0:00

Results:

Errors:

Error line 744: Value not allowed for weatherwinddirectioncardinal: East Northeast
Error line 1055: The count field is required.

Add Observations Summary: CSV Rows Reviewed: 1054

Batch ID 451
AddObservations
plimptonc@gmail.com

Results:

Add Observations Summary: CSV Rows Reviewed: 1054, New PointCount Events created: 217, New PointCount Observations created: 1045, New PointCount SiteConditionEvents created: 217, New PointCount SiteConditionProperties created: 1207

BULK UPLOADING PROJECT DATA

EXERCISE 3: BULK UPLOADING SAMPLING UNITS

BULK UPLOADING SAMPLING UNITS
EXERCISE 3

Purpose: Build on exercise 1 using the Bulk Upload tool to create multiple sampling units at once for a given survey type

Goal: Bulk upload a new point onto your existing transect and add a new transect with three points

BULK UPLOADING SAMPLING UNITS
EXERCISE 3 *(THINKING AHEAD)*

- The Bulk Uploader tool is useful when you have many sampling units to add to your project.
- The Bulk Uploader tool can add sampling units to an existing hierarchy or create an entirely new hierarchy *(remember our discussion thinking about Study Areas!)*
- The Bulk Uploader tool can also add Researchers or Observation data to your project
  - Note: we will not be covering those use cases today but can assist in office hours

BULK UPLOADING SAMPLING UNITS
EXERCISE 3

Exercise 3 instructions

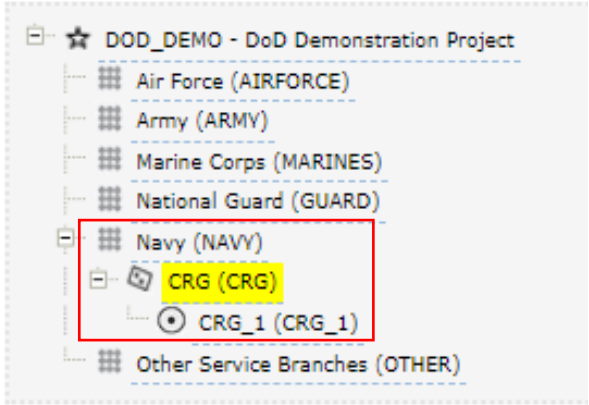
- okay not to follow instructions exactly

BULK UPLOADING SAMPLING UNITS

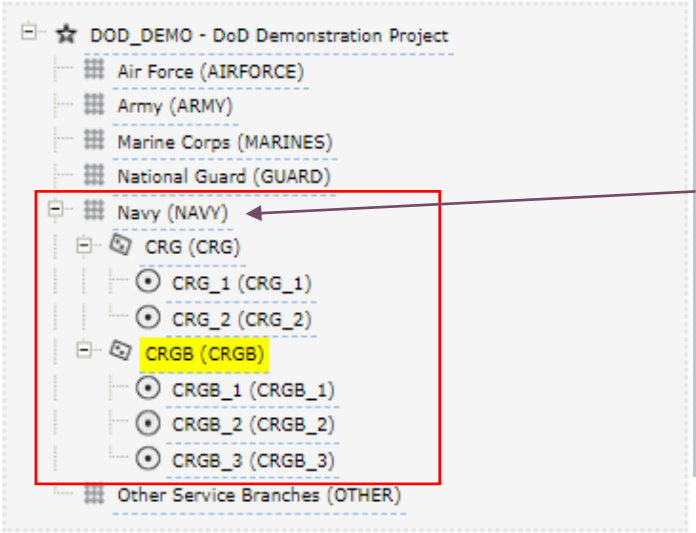
EXERCISE 3

Tip: Go back to Project Leader (Sampling Units-> Create and Manage) and take a look at the sampling unit you already created in Exercise 1. In this exercise, we'll create a new point under the existing transect, plus add a new transect with new points.

After Exercise 1:



After Exercise 3:



Make sure you are using the same Study Area (your service branch) for Exercise 3!

In this example, the Study Area Name is Navy and the Study Area Short Name is NAVY

Study Area: Navy
Point Count Transect: CRG
Point Count Point: CRG_1

LONG NAME VS SHORT NAME:
WHAT'S THE DIFFERENCE?

- Every sampling unit has a **Short Name** and a **Long Name**
  - Short Names and Long Names can be the same
- **Short Name** + **Long Name** combinations must be unique within an AKN Project
  - e.g., transect names and point count names **CAN NOT BE THE SAME**
- **Short Names** will be seen throughout the tools and in your data download
  - It is the shorthand name for each sampling unit
- **Short Names** are limited to 12 characters
- **Long Names** can be longer and more descriptive, if useful

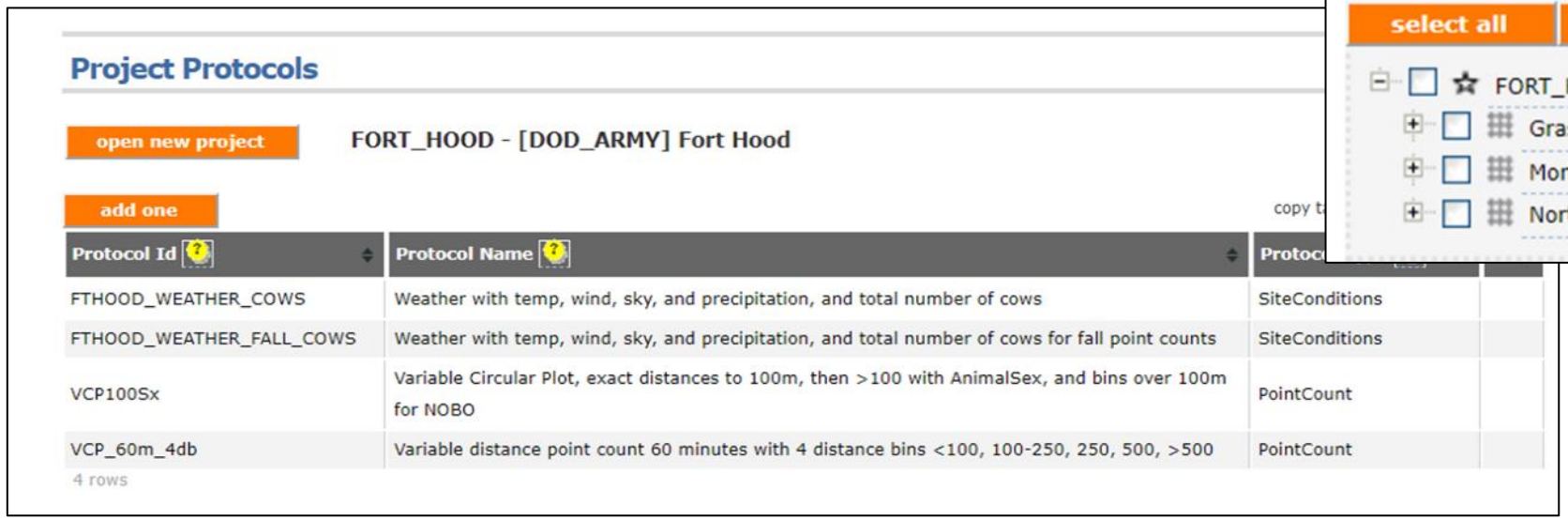
LONG NAME VS SHORT NAME:
WHAT'S THE DIFFERENCE?

EXAMPLES (any of these would be correct):

Point Count Transect Long Name	Point Count Transect Short Name
East Training Area	ETA
East Training Area 1	ETA-1
ETA	ETA
ETA-1	ETA-1

EXAMPLE: FORT CAVAZOS (HOOD), TX

- Modified existing protocol to meet data entry needs for three survey types
- Structured sampling units across installation
- Bulk uploaded over 3,000 rows of data; now direct entering survey data in AKN



Project Protocols

open new project FORT_HOOD - [DOD_ARMY] Fort Hood

add one

Protocol Id	Protocol Name	Protoc
FTHOOD_WEATHER_COWS	Weather with temp, wind, sky, and precipitation, and total number of cows	SiteConditions
FTHOOD_WEATHER_FALL_COWS	Weather with temp, wind, sky, and precipitation, and total number of cows for fall point counts	SiteConditions
VCP100Sx	Variable Circular Plot, exact distances to 100m, then >100 with AnimalSex, and bins over 100m for NOBO	PointCount
VCP_60m_4db	Variable distance point count 60 minutes with 4 distance bins <100, 100-250, 250, 500, >500	PointCount

4 rows

1. Select sampling units from the tree below.

select all clear all

FORT_HOOD - [DOD_ARMY] Fort Hood

- Grassland Point Counts 2016-2018 (GRASSLAND)
- Monitoring of Owls and Nightjars (MOON)
- Northern Bobwhite Point Counts (NOBO_PC)

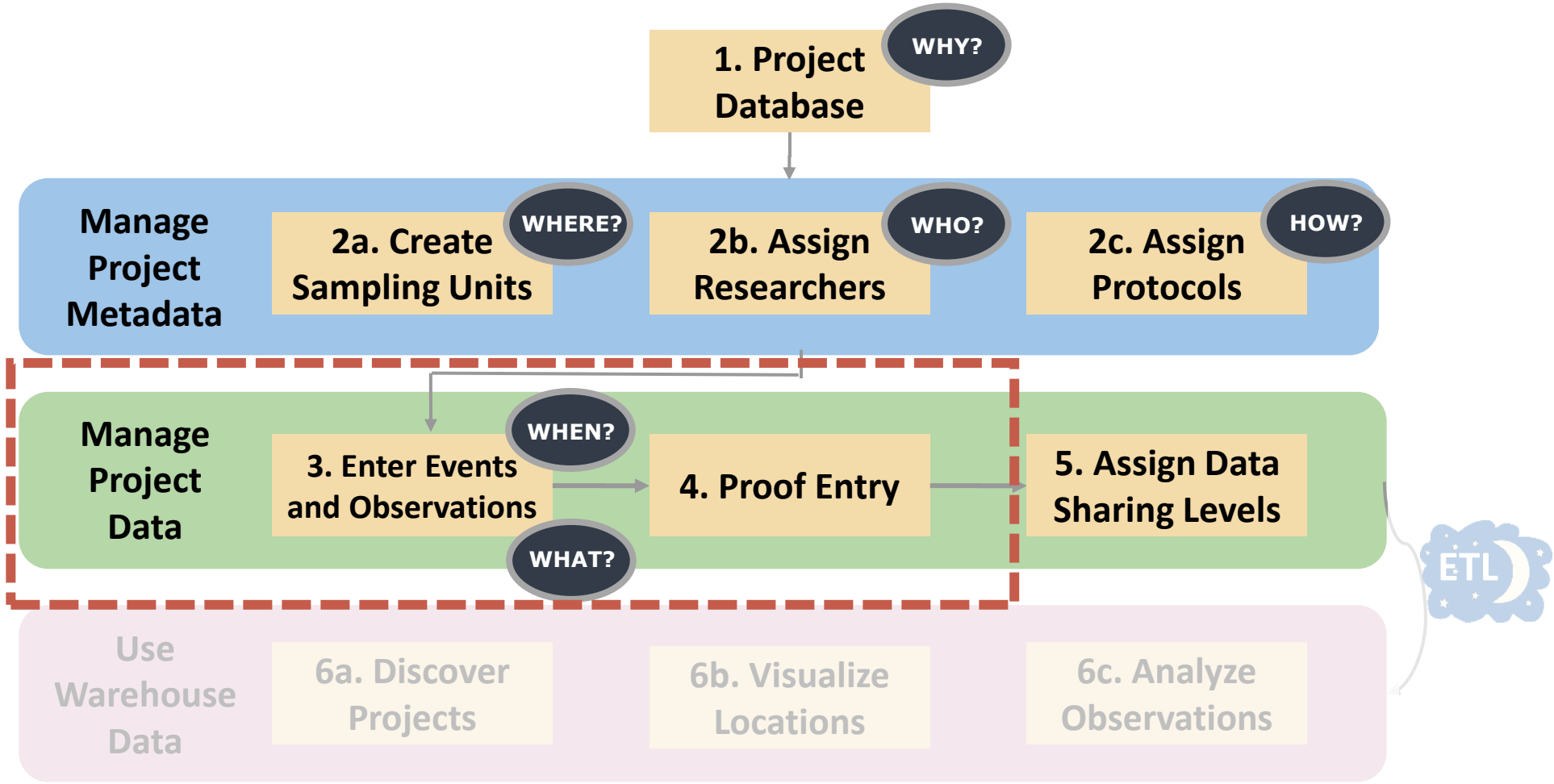
OFFICE HOURS

Discuss bulk loading and other issues regarding your observation data

Sign-up sheet up front for in-person office hours tomorrow and Thursday.

For future virtual office hours, sign up here: https://www.dodakn.org/resources/get-training/#office-hourss/

ANY QUESTIONS ON MANAGING PROJECT DATA?




DEPARTMENT OF DEFENSE
LEGACY PROGRAM

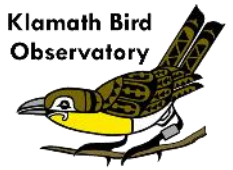

DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA


DEPARTMENT OF DEFENSE
NATURAL RESOURCES

LUNCH


Point Blue
Conservation
Science


ERDC
ENGINEER RESEARCH & DEVELOPMENT CENTER


Klamath Bird
Observatory

NAVAL BASE KITSAP-BANGOR PRESENTATIONS

FIELD EXERCISE INTRODUCTION
&
LOGISTICS FOR TOMORROW

FIELD EXERCISE: POINT COUNT PROTOCOL

- 5-minute surveys
- Unlimited-radius point count w/ distance sampling
- Observations recorded per 1-minute intervals

FIELD EXERCISE: POINT COUNT PROTOCOL

- Collect data **every minute**
- Use **4-letter bird codes**
- Record **# of individuals** in same location
- **Distance** to nearest meter (*try practicing your distance estimations with a range finder!)*
- **Detection Type** (DT):
  - S=Song; C=Call; D=Drum; V=Visual; W=Wing; F=Flyover
- **Prev** (Previously Detected Individuals)
  - Use "P" is individual was detected at a previous **point**
- **Breed** (Breeding Status)
  - Use "S" to indicate if bird sang during count but was not detected another way

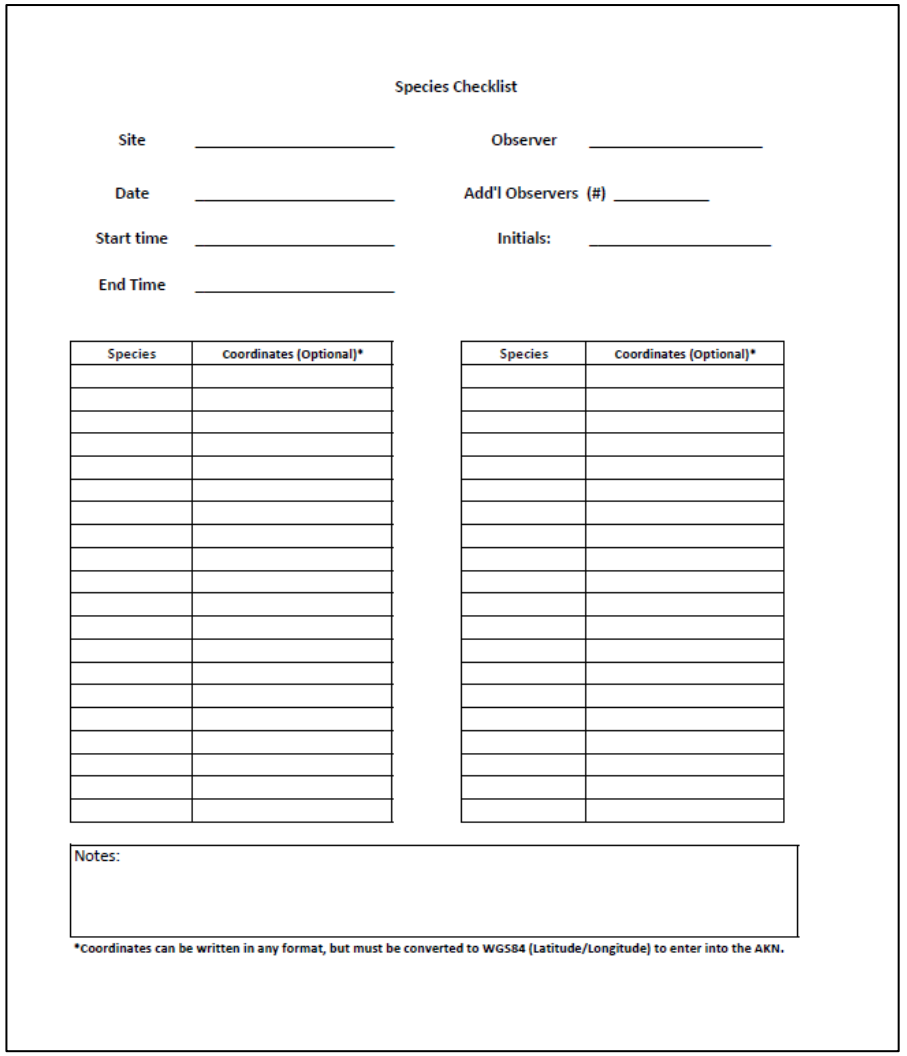
Station	Time	Species Code	Count	DT	Distance	Loc	Prev	Breed	Note#	Count	DT	Distance	Loc	Prev	Breed	Note#
01	06 02	ACWO	2	C	48											
		OATI		S	23											
		BGGN		V	11											
	06 03	ATFL		C	24			S								
	06 04	NONE														
	06 05	BEWR		S	81						S	92				
		LAZB		S	103											
	06 06	TUVU		F	121											

Detection Type

FIELD EXERCISE: SPECIES CHECKLIST

(EXTRA CREDIT)

- Keep a record of **all the species you observe** while you're out (including points and anything in between points)
- Instructions for creating an **area search plot** Sampling Unit in DOD_DEMO are in Extra Credit Exercise B



Species Checklist

Site _____ Observer _____

Date _____ Add'l Observers (#) _____

Start time _____ Initials: _____

End Time _____

Species	Coordinates (Optional)*

Species	Coordinates (Optional)*

Notes:

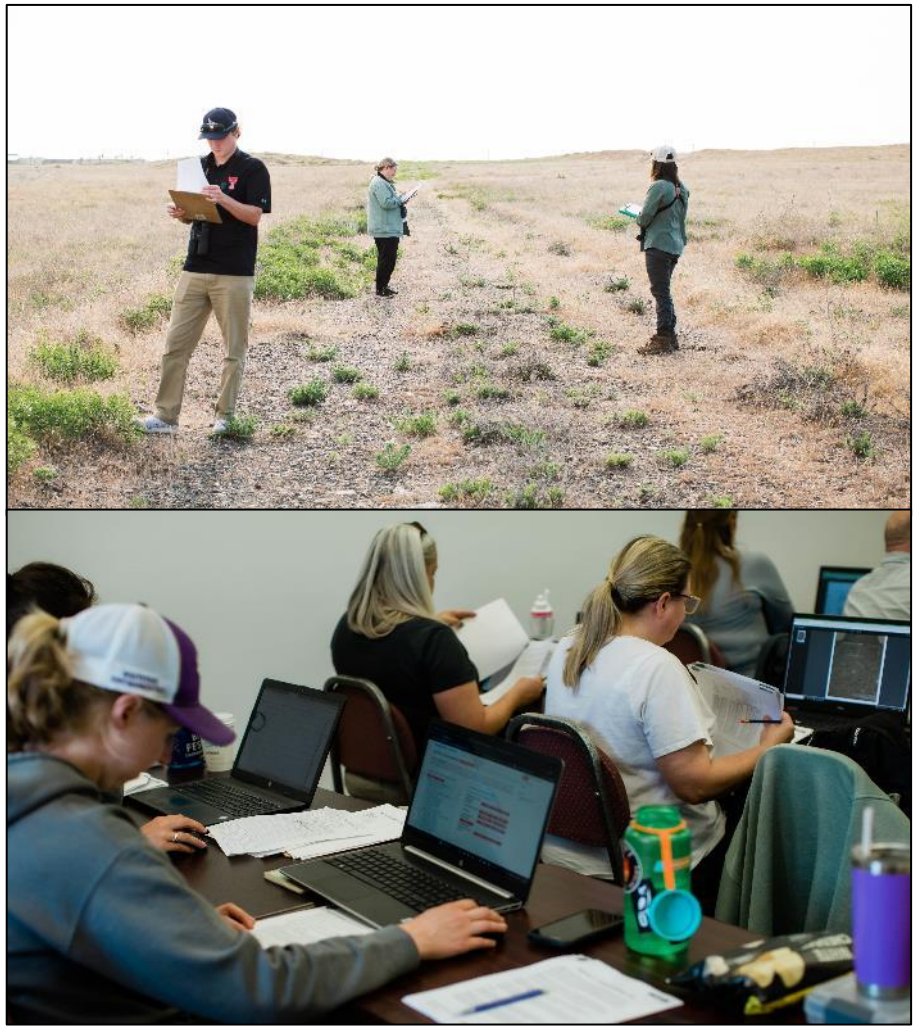
*Coordinates can be written in any format, but must be converted to WGS84 (Latitude/Longitude) to enter into the AKN.

FIELD EXERCISE: IN THE AKN

What you'll do:

- Learn how to **download a sampling unit** shapefile from your project
- Learn how to **create sampling units** by uploading shapefiles
    - You'll re-upload the shapefile you just downloaded while renaming the points so that you have your own unique sampling units for your point count data
- **Enter data**

- Tomorrow: Explore your own data using the **Analyst Tool**



PLUSES AND DELTAS

DAY 1 WRAP-UP

Reminder: Bring lunch tomorrow!

END OF DAY 1

DoD and the AKN: Who, What, Where, When , Why, and How

DoD Regional Training
August 29-31, 2023
Naval Base Kitsap-Bangor, WA

Sam Veloz
Dianne Miller

Elizabeth Neipert
Zoe Duran

John Alexander
Caitlyn Gillespie

Point Blue Conservation Science

ERDC ENGINEER RESEARCH & DEVELOPMENT CENTER

Klamath Bird Observatory

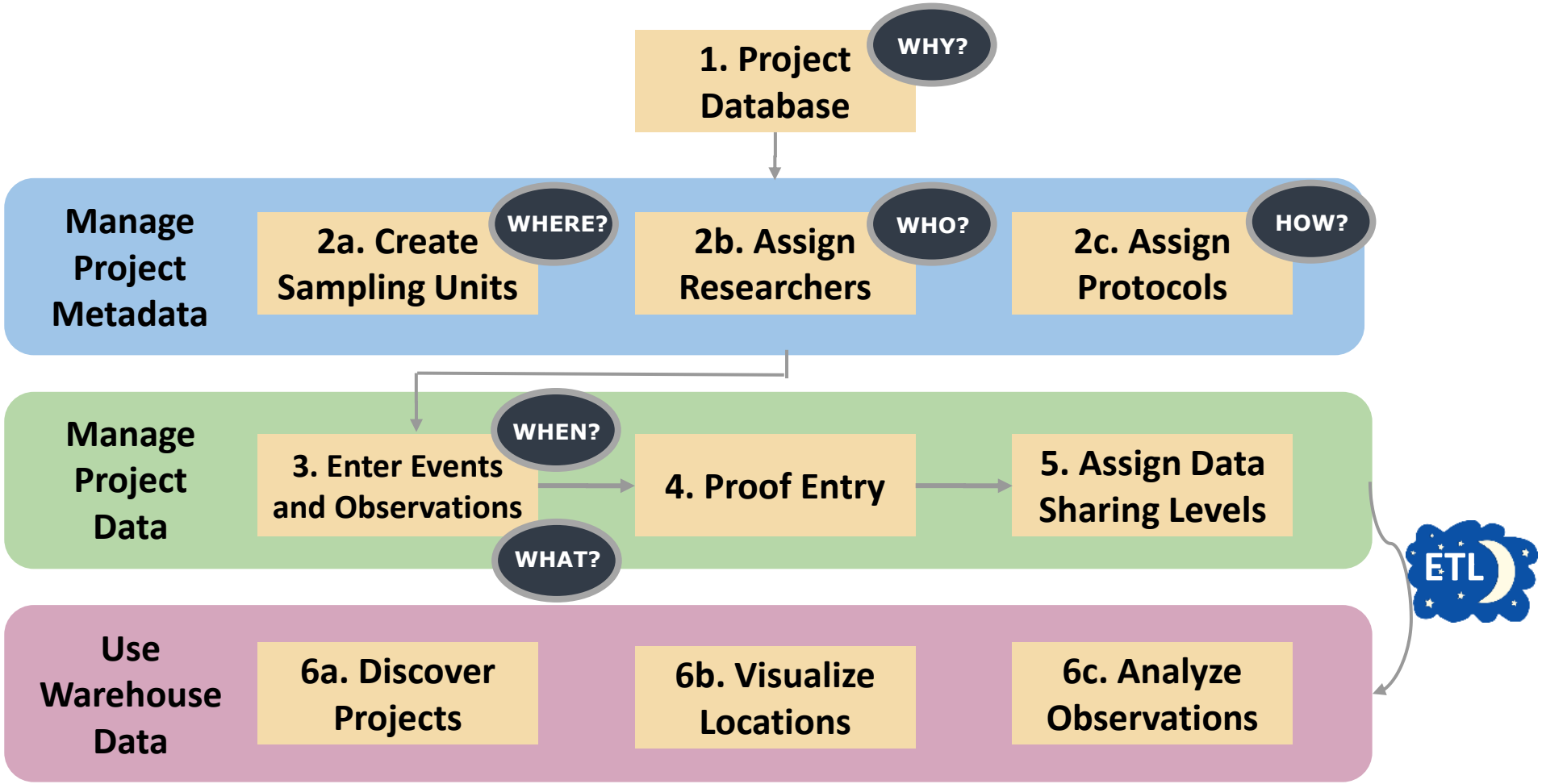
AVIAN KNOWLEDGE NETWORK

pointblue.github.io/dod_workshop
dodakn.org

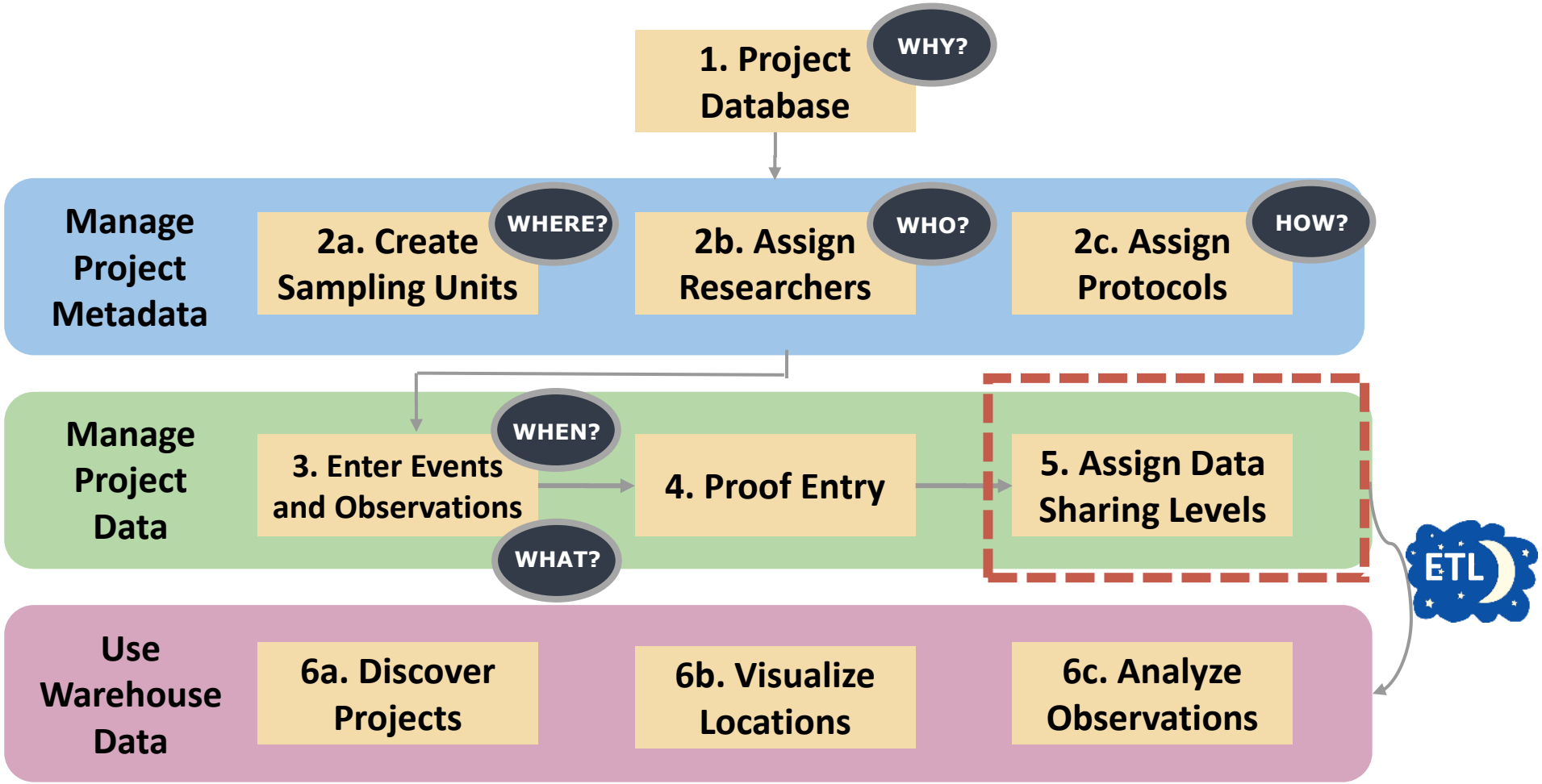
Photo: Heather Roskelley/Audubon Photography Awards

AKN WAREHOUSE DATA 101

WORKFLOW FOR MANAGING A PROJECT



MANAGING A PROJECT: DATA SHARING LEVELS



DATA SHARING LEVELS

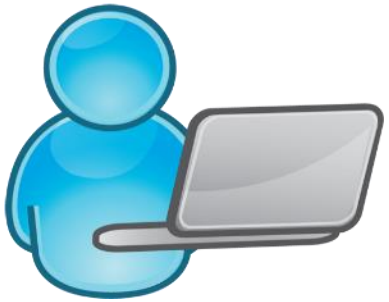
Defines how visible each observation is for querying, summarizing, visualizing, and analyzing.

Controlled by the Project Leader within each Project

5. Assign Data Sharing Levels

REVIEW LEVELS FOR EACH EVENT

Steps to enter and review data in preparation for sharing



Project Biologist enters a new event and observations

Event is **RAW**

Data entered

Event is **CLEAN**

Data 1st review by Biologist

Event is **AVAILABLE**

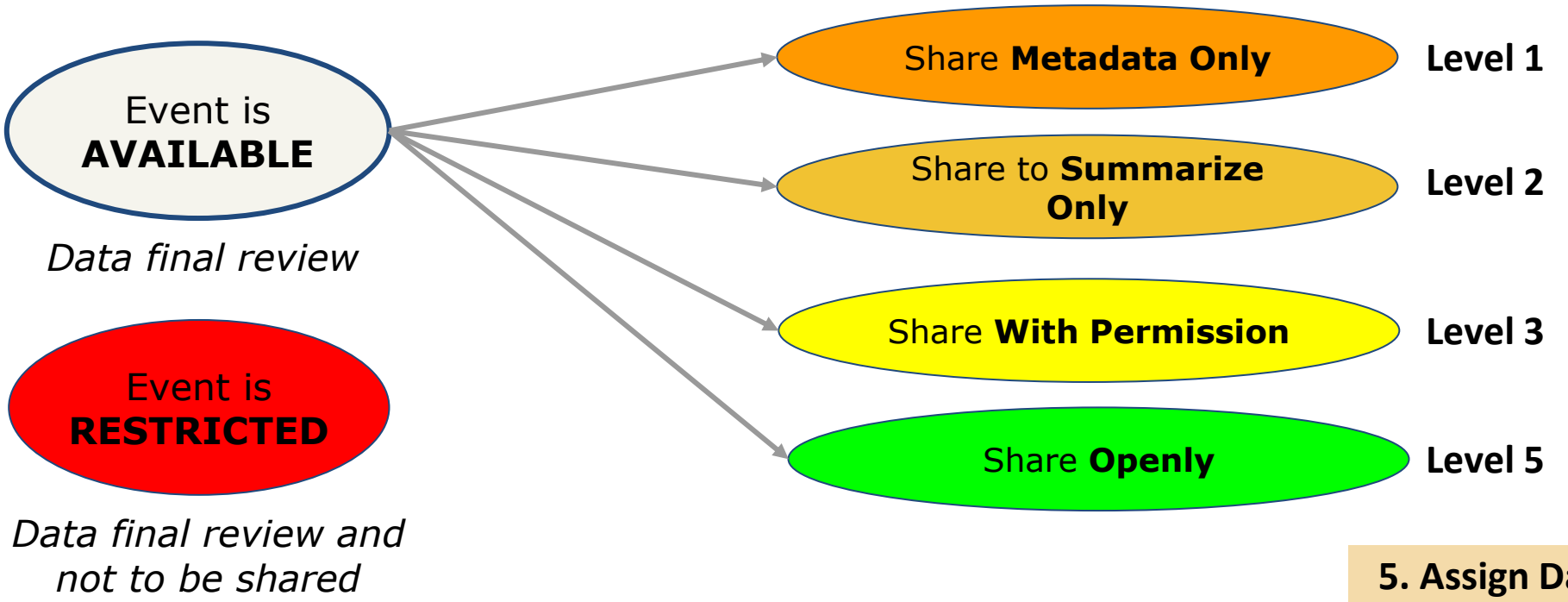
Data final review

Event is **RESTRICTED**

Data final review and not to be shared

DATA SHARING LEVELS FOR EACH EVENT

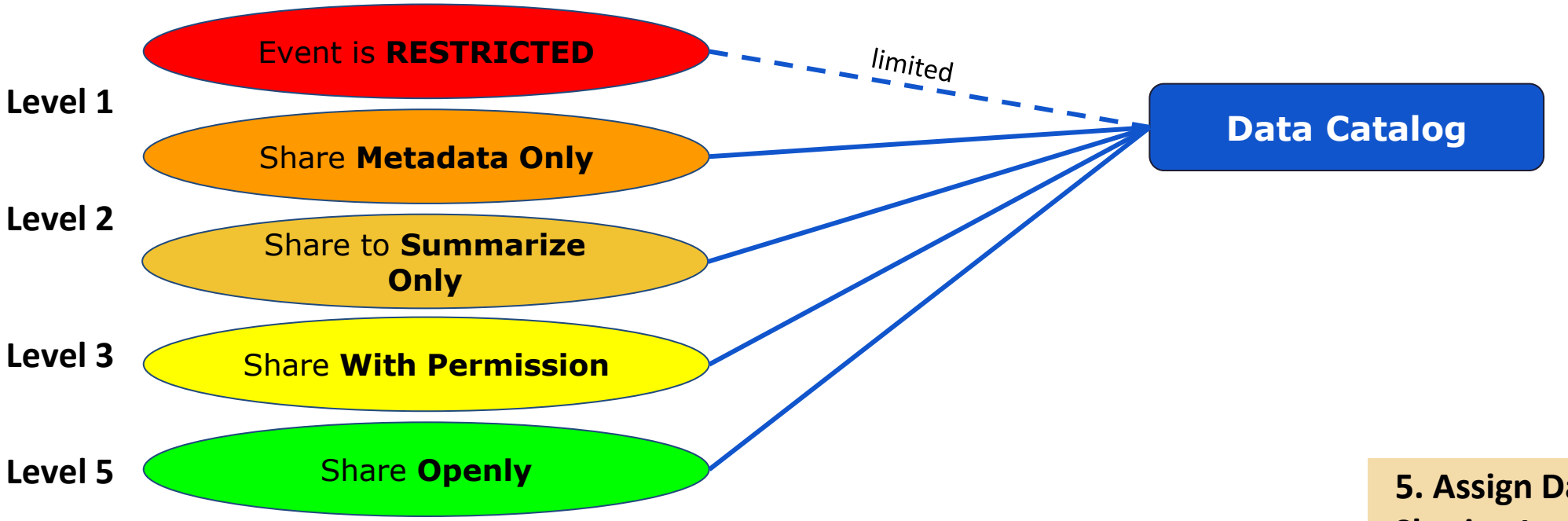
Choices informs the Point Blue Science Cloud tools of your intentions.



5. Assign Data Sharing Levels

DATA SHARING AND TOOL ACCESS

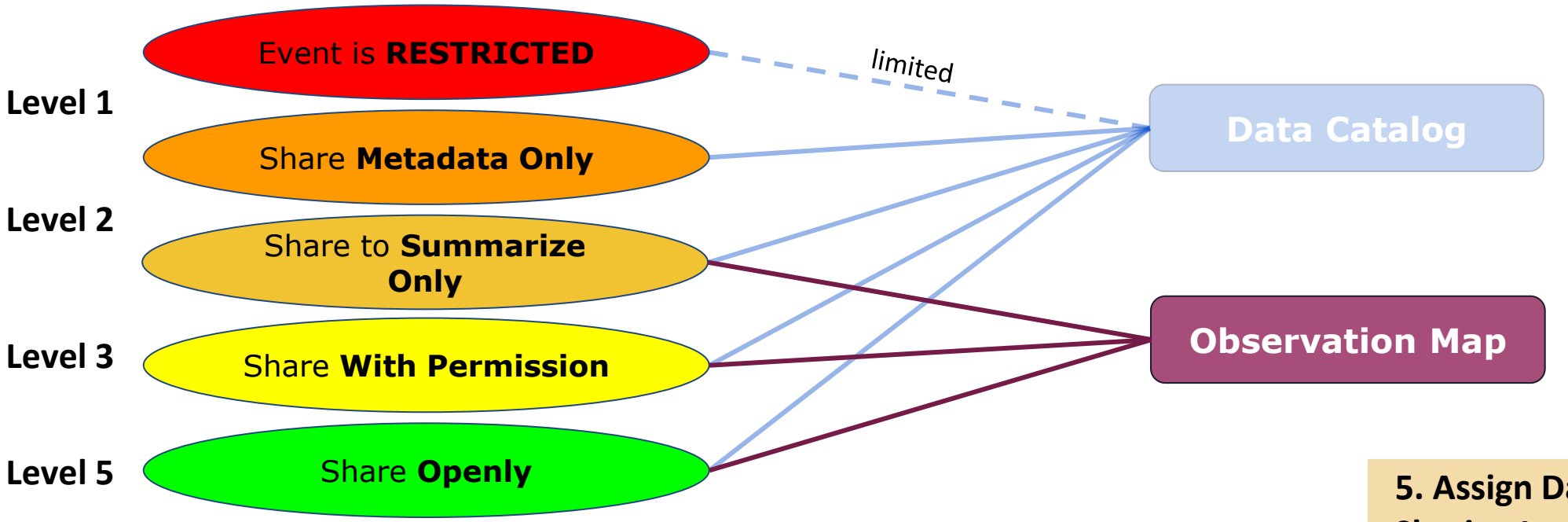
Choices informs the Point Blue Science Cloud tools of your intentions.



5. Assign Data Sharing Levels

DATA SHARING AND TOOL ACCESS

Choices informs the Point Blue Science Cloud tools of your intentions.



5. Assign Data Sharing Levels

DATA SHARING LEVEL MOTIVATION

- Organizational Policy
- Federal / State Law
- Research and Right of First Publication
- Threatened / Endangered Species
- Private Landowner Agreements
- Contribute to AKN Science
- Partnership / Collaboration Development

5. Assign Data Sharing Levels

EXAMPLE: USACE-WILLAMETTE VALLEY PROJECT, OR

- New biologist took DoD AKN training at NMFWA
- Worked with DoD AKN Team to ID data within boundary
- Data was both USACE and partner data
- Created USACE WVP within USACE enterprise
- Gained access to USACE-owned data
- Reaching out to partners about sharing data within boundary

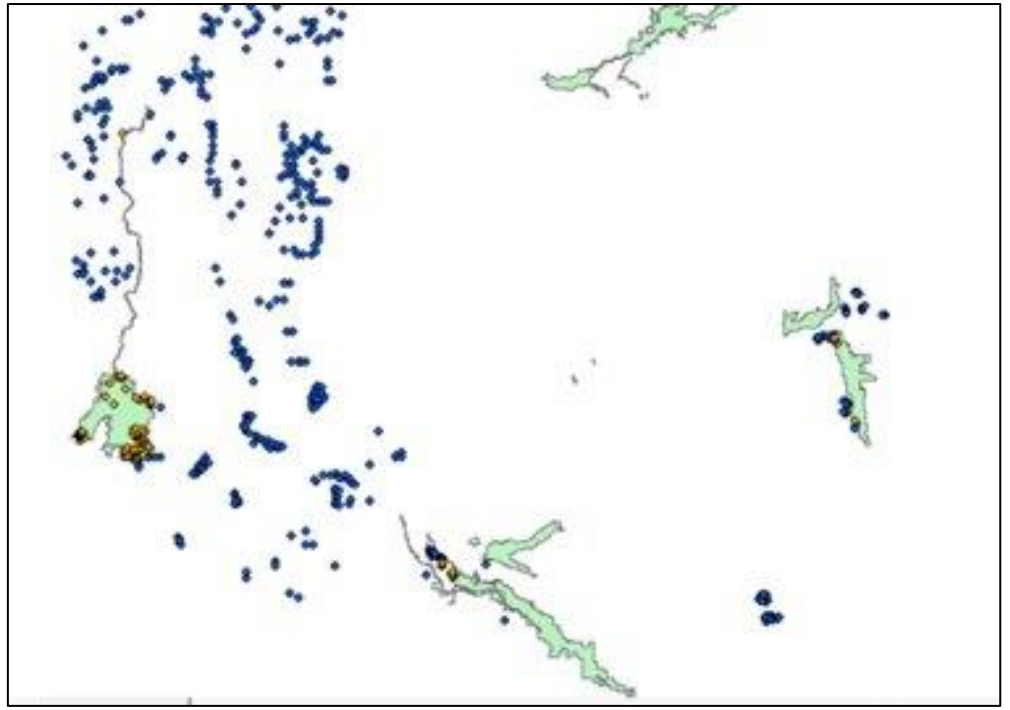
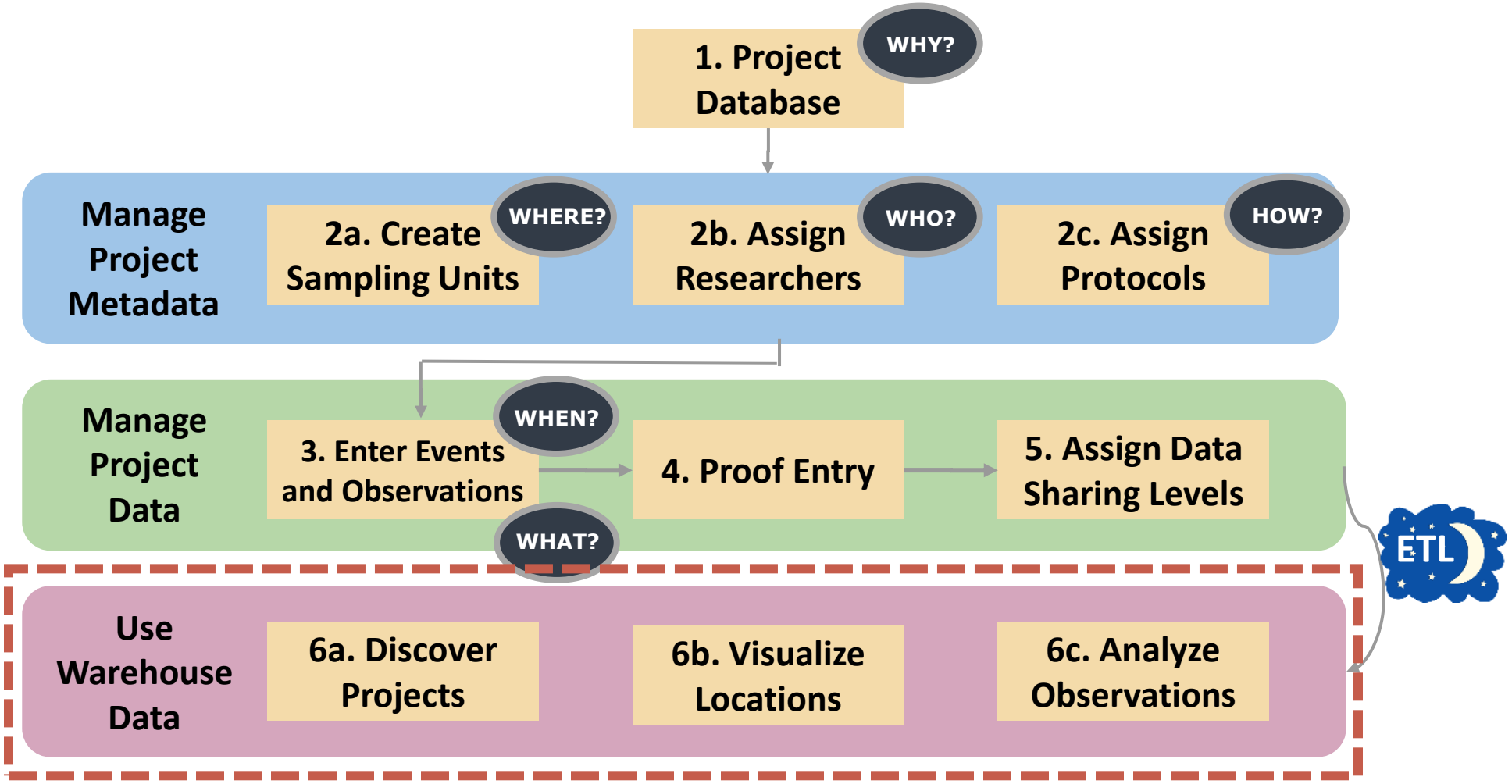


Photo: Derek Hameister

MANAGING A PROJECT: DATA WAREHOUSES



DATA WAREHOUSES

Database with homogenized copy of observation data, organized by sampling method for cross-project query and analysis

Project data input today shows up automatically in the warehouse the day after you enter it

Photo: Terry Sohl

PROJECT DATA VS. WAREHOUSE DATA

Study Area	Transect	Point	Protocol	Visit	Date	Start Time	End Time	Time Bi	Time Bin	Count	Spp	Common Name	Scientific Name	Detection	Distance B	Distance B	Point Note	Obs	Researcher	Data Status
LITTLERIVER	COMP_5	164	3_5_10m2	1	6/3/2019	8:01:00	8:11:00	3	0_3min	1	PIWA	Pine Warbler	Setophaga pinus	NR	G25	25 to 50	Light sprinkle, light rain		Arbour, David	AVAILABLE Level 5
LITTLERIVER	COMP_5	164	3_5_10m2	1	6/3/2019	8:01:00	8:11:00	3	0_3min	1	GCFL	Great Crested Flycat	Myiarchus crinitu	NR	G50	50 to 100	Light sprinkle, light rain		Arbour, David	AVAILABLE Level 5
LITTLERIVER	COMP_5	164	3_5_10m2	1	6/3/2019	8:01:00	8:11:00	3	0_3min	1	KEWA	Kentucky Warbler	Geothlypis formc	NR	G50	50 to 100	Light sprinkle, light rain		Arbour, David	AVAILABLE Level 5
LITTLERIVER	COMP_5	164	3_5_10m2	1	6/3/2019	8:01:00	8:11:00	10	5_10min	1	BHCO	Brown-headed Cow	Molothrus ater	NR	G50	50 to 100	Light sprinkle, light rain		Arbour, David	AVAILABLE Level 5

Project	Location	Protocol	Date	Time	HabitatPlot HabitatPlotId	HabitatPlot Composition Vine	HabitatPlot Composition Cane	HabitatPlot Composition Overstory	HabitatPlot Composition Midstory	HabitatPlot Composition Understory	Researcher
LITTLERIVERNWR	164	FWS_PC_HAB_LWRMISS	6/3/2019	8:01:00	164	3	1	3	3	4	Arbour, David

Project Database Version

Warehouse Version

GlobalUniqueIdentifier	ProjectCode	ProjectName	LocalityID	StudyArea	Transect	TransectName	Point	SamplingU	ParentSam	Samp
URN:catalog:PRBO:LITTLERIVERNWR.300600.PointCount.3_5_10m25_50_100MFlyByTm.329406.1	LITTLERIVERNWR	Little River NWR	LITTLERIVERNWR:COMP_5	Little River NWR	COMP_5	Compartment_5	164	300600	348115	Point
URN:catalog:PRBO:LITTLERIVERNWR.300600.PointCount.3_5_10m25_50_100MFlyByTm.329406.2	LITTLERIVERNWR	Little River NWR	LITTLERIVERNWR:COMP_5	Little River NWR	COMP_5	Compartment_5	164	300600	348115	Point
URN:catalog:PRBO:LITTLERIVERNWR.300600.PointCount.3_5_10m25_50_100MFlyByTm.329406.3	LITTLERIVERNWR	Little River NWR	LITTLERIVERNWR:COMP_5	Little River NWR	COMP_5	Compartment_5	164	300600	348115	Point
URN:catalog:PRBO:LITTLERIVERNWR.300600.PointCount.3_5_10m25_50_100MFlyByTm.329406.4	LITTLERIVERNWR	Little River NWR	LITTLERIVERNWR:COMP_5	Little River NWR	COMP_5	Compartment_5	164	300600	348115	Point

DecimalLatitu	DecimalLon	Visit	ProtocolCode	Observatic	YearCollec	Month	DayC	JulianDa	JulianDayV	P Time	Collec	ScientificN	CommonN	SpeciesCo	Phylogen	DistanceFr	Flyc	I	Detectic	E	Observa	NoObse	RecordPermissions
33.9699705	-94.70262	1	3_5_10m25_50_100MFlyByTm	6/3/2019	2019	6	3	154	75	8:01:00	DA	Setophaga	Pine Warb	PIWA	1696	37.5			NR		1	0	AVAILABLE LEVEL 5
33.9699705	-94.70262	1	3_5_10m25_50_100MFlyByTm	6/3/2019	2019	6	3	154	75	8:01:00	DA	Myiarchus	Great Cres	GCFL	1254	75			NR		1	0	AVAILABLE LEVEL 5
33.9699705	-94.70262	1	3_5_10m25_50_100MFlyByTm	6/3/2019	2019	6	3	154	75	8:01:00	DA	Geothlypis	Kentucky V	KEWA	1718	75			NR		1	0	AVAILABLE LEVEL 5
33.9699705	-94.70262	1	3_5_10m25_50_100MFlyByTm	6/3/2019	2019	6	3	154	75	8:06:00	DA	Molothrus	Brown-hea	BHCO	2015	75			NR		1	0	AVAILABLE LEVEL 5

PROJECT DATA VS. WAREHOUSE DATA

Point Count Data

Same: Species, Count, Protocol, Locations, Detection Cues, Observation Time, Data Sharing Levels

Differences: Binned Distance averaged, Comments missing, no Site Conditions, Observer Names to Initials, no Time Bin

DATA SHARING GUIDELINES / POLICIES AND AGREEMENTS

DATA OWNERSHIP AND CONTROL

Project Leaders / Organizations are the owner of data from a Project, regardless of where it is stored

Project Leaders can change Data Sharing Levels at any time, including making more restrictive

PARTNERSHIPS AND CONTRACTORS

Partner / Contractors

- DoD collects data for a Partnership
- Hiring independent contractors for survey work

DoD

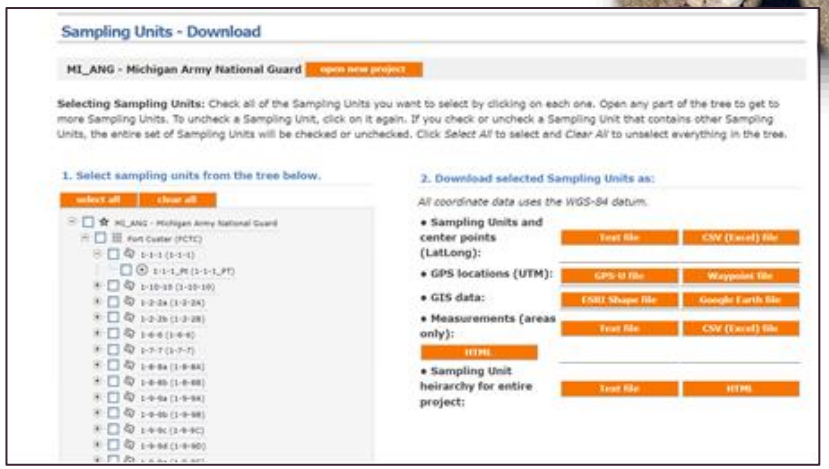
- Wants to ask questions across DoD
- Needs to manage and control all data on installations

We want data collected on/near DoD installations in DoD Projects

CONTRACTORS & TRAINING

MICHIGAN ARMY NATIONAL GUARD (MIARNG)

- Contracts Kalamazoo Nature Center (KNC) to complete bird surveys
- Wanted to train long-term staff to use AKN
- Attended training and entering data
- Additional benefit, KNC to enter other data, supplementing MIARNG data



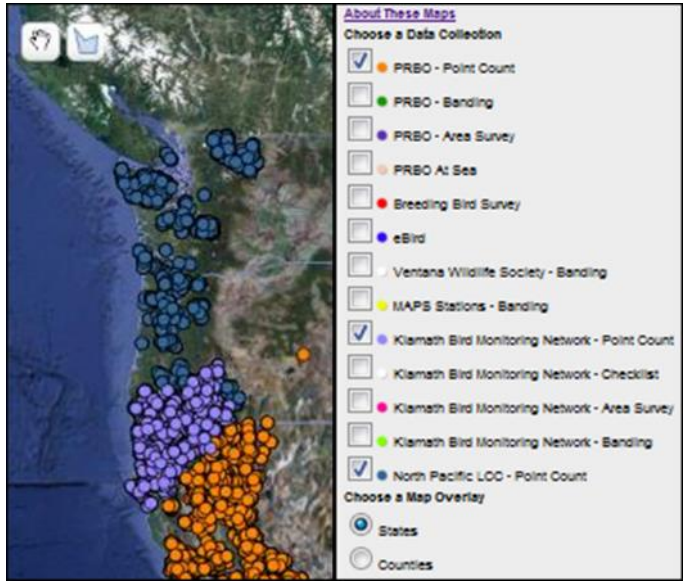
CASE STUDY:

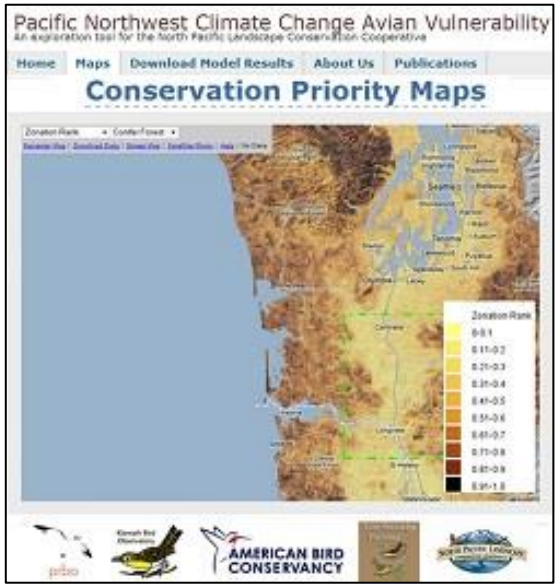
PARTNERS IN FLIGHT FOCAL SPECIES AND CLIMATE-SMART FOREST MANAGEMENT

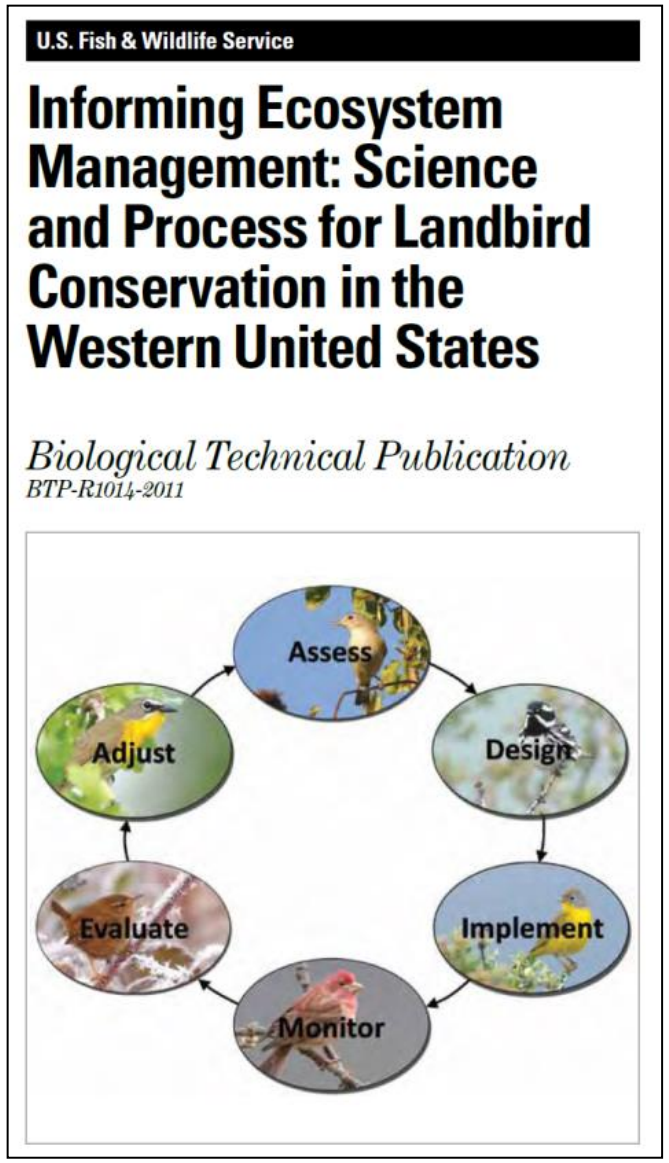
Avian Knowledge Northwest

AVIAN KNOWLEDGE NETWORK

DATA MANAGEMENT PROJECTS DECISION SUPPORT TOOLS RESOURCES







Voluntary partnerships:

- ***Keeping common birds common***
- ***Helping species at risk***

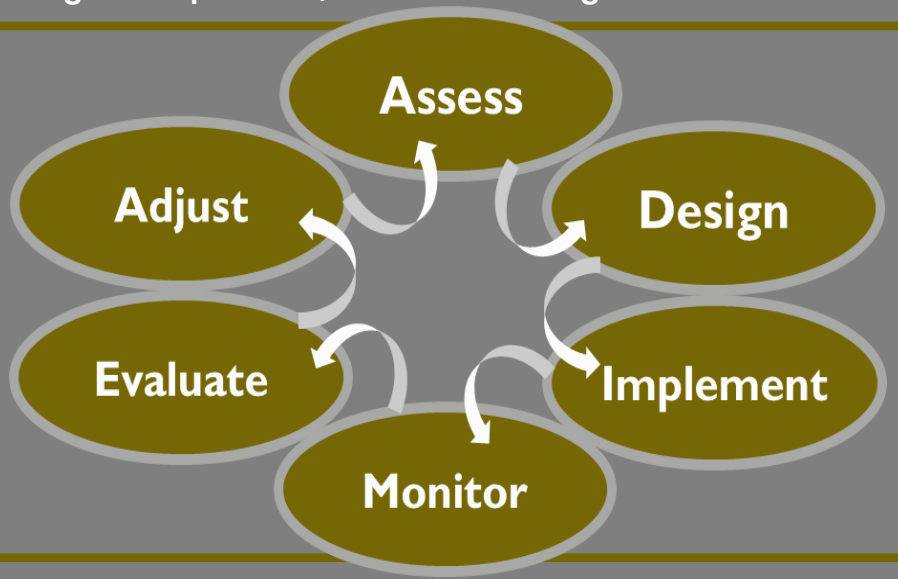
"PIF's multi-species, science-based approach can serve as a catalyst for improving ecosystem management on public lands"

(Stephens et al 2011, Rosenberg et al 2016)

CASE STUDY

PNW FOREST MANAGEMENT – BIRDS AS INDICATORS

Assess: a management need is identified and assigned specific, measurable goals.



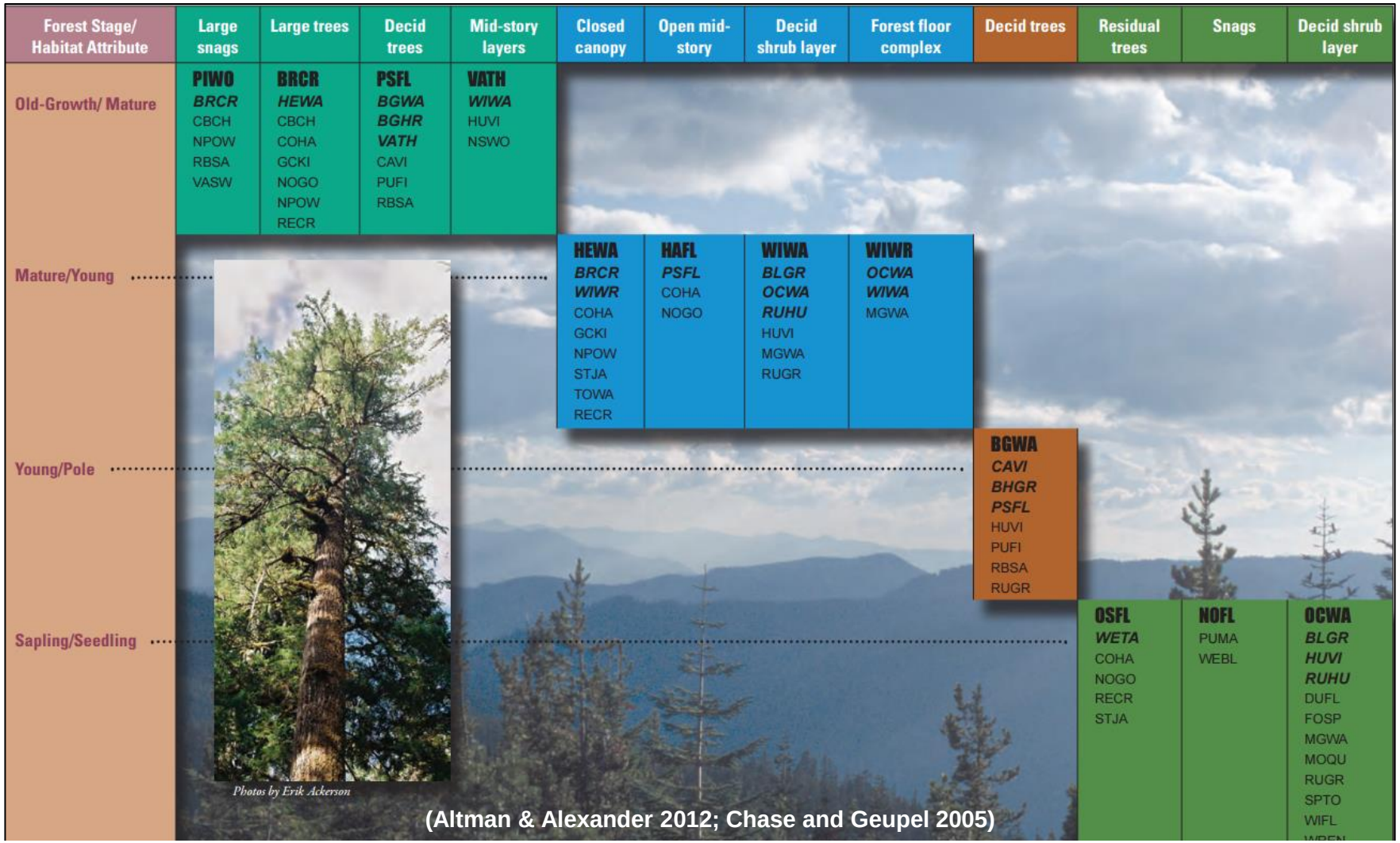
Design and Implement: Management plans designed to meet the specific goals are developed and put into action.

Monitor and Evaluate: Study the effects of actions to determine whether goals are being met.

Adjust: Based on science, changes are made if necessary to better achieve goals.

Oregon-Washington PIF Bird Conservation Strategies

Focal Species – Habitat Attributes

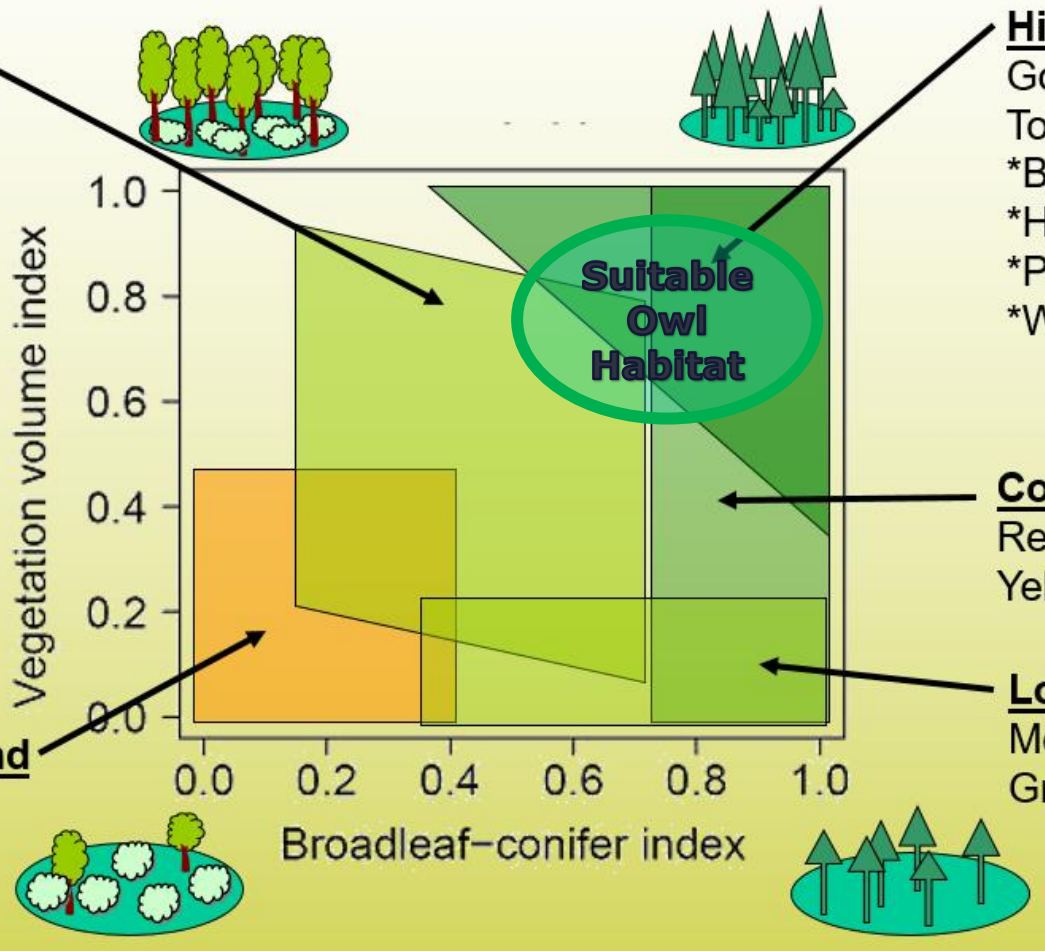


Quantitative Habitat and Population Objectives

Forest Management Habitat Models

Broadleaf-conifer mix
Bushtit
Lazuli Bunting
Spotted Towhee
Black-headed Grosbeak
*Black-thr. Gray Warbler
Nashville Warbler

High volume conifer
Golden-crowned Kinglet
Townsend's Solitaire
*Brown Creeper
*Hermit Warbler
*Pacific-slope Flycatcher
*Winter Wren



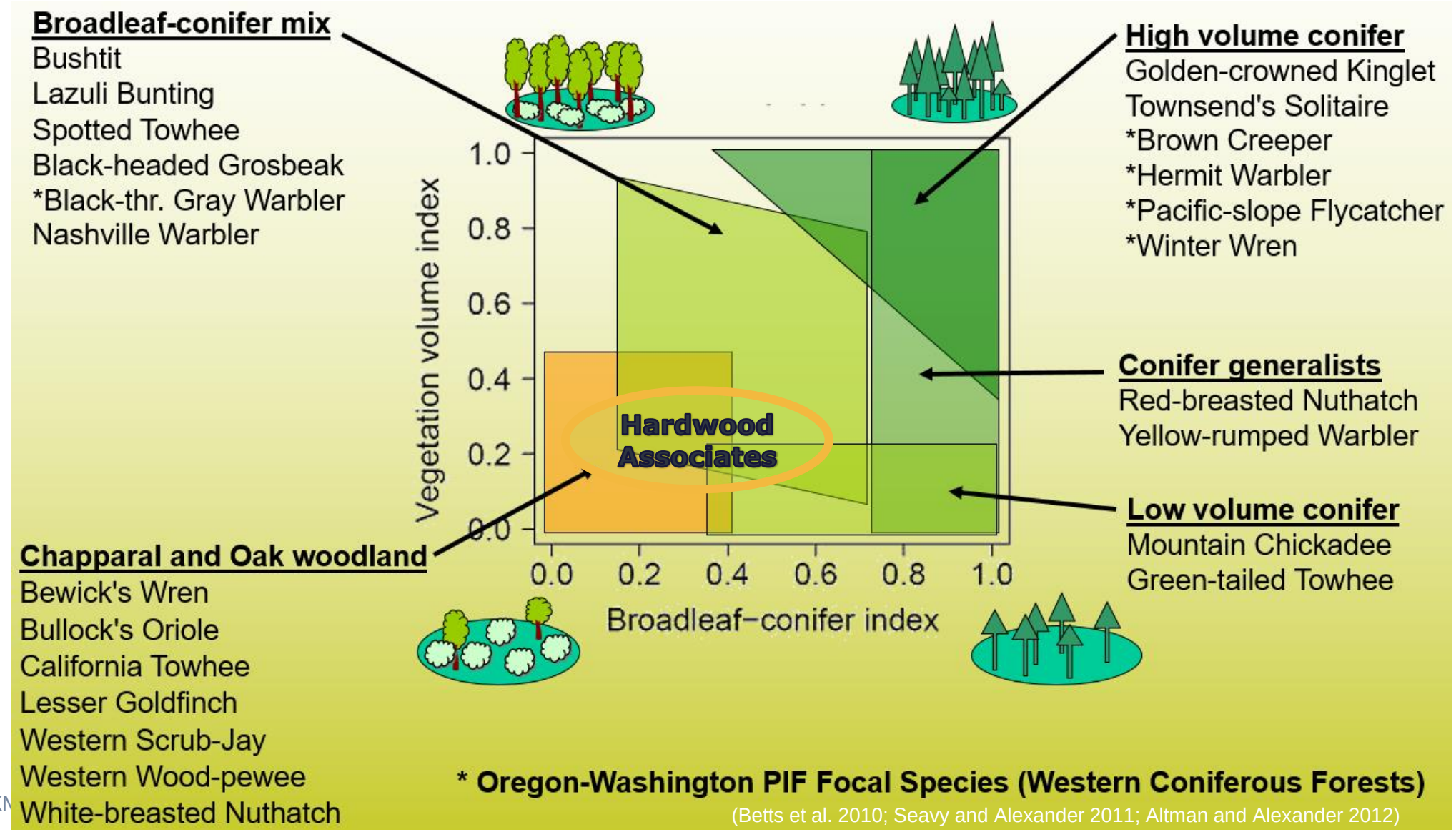
Conifer generalists
Red-breasted Nuthatch
Yellow-rumped Warbler

Low volume conifer
Mountain Chickadee
Green-tailed Towhee

Chapparal and Oak woodland
Bewick's Wren
Bullock's Oriole
California Towhee
Lesser Goldfinch
Western Scrub-Jay
Western Wood-pewee
White-breasted Nuthatch

*** Oregon-Washington PIF Focal Species (Western Coniferous Forests)**
(Betts et al. 2010; Seavy and Alexander 2011; Altman and Alexander 2012)

Forest Management Habitat Models



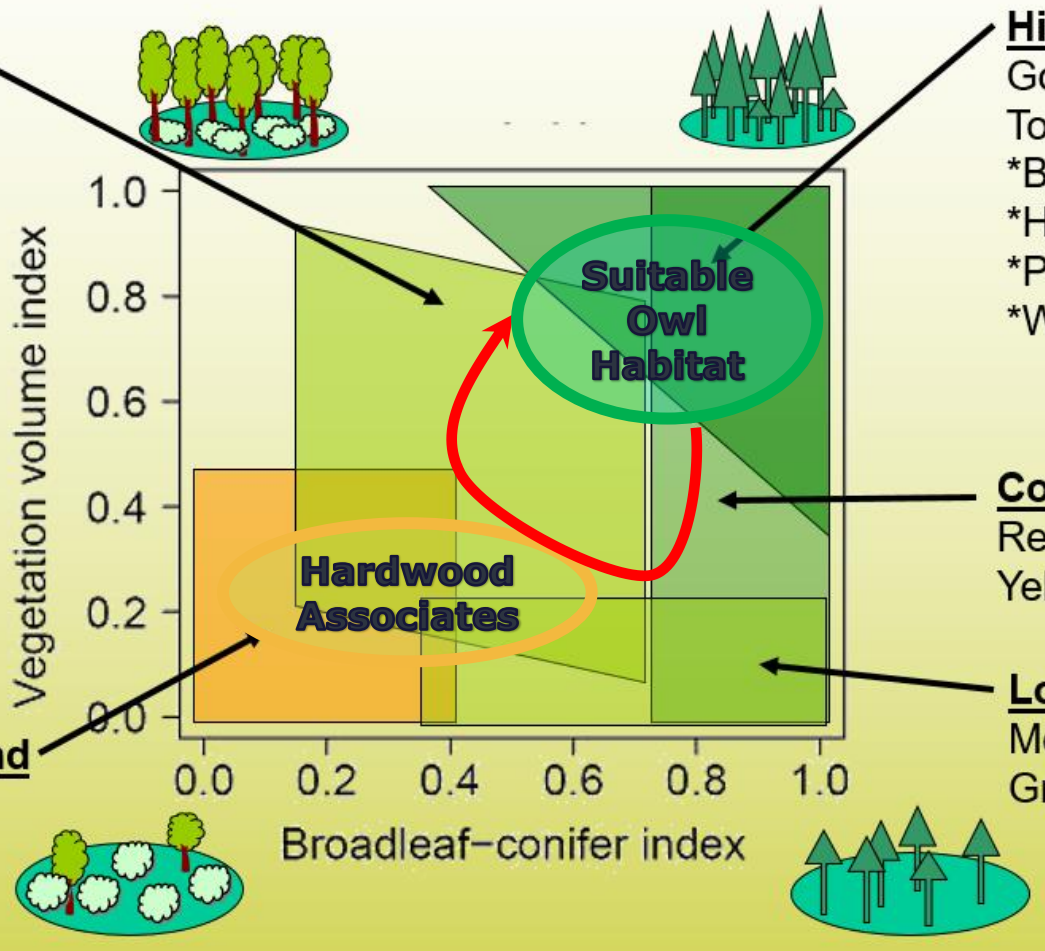
*** Oregon-Washington PIF Focal Species (Western Coniferous Forests)**

(Betts et al. 2010; Seavy and Alexander 2011; Altman and Alexander 2012)

Forest Management Habitat Models

Broadleaf-conifer mix
Bushtit
Lazuli Bunting
Spotted Towhee
Black-headed Grosbeak
*Black-thr. Gray Warbler
Nashville Warbler

High volume conifer
Golden-crowned Kinglet
Townsend's Solitaire
*Brown Creeper
*Hermit Warbler
*Pacific-slope Flycatcher
*Winter Wren



Conifer generalists
Red-breasted Nuthatch
Yellow-rumped Warbler

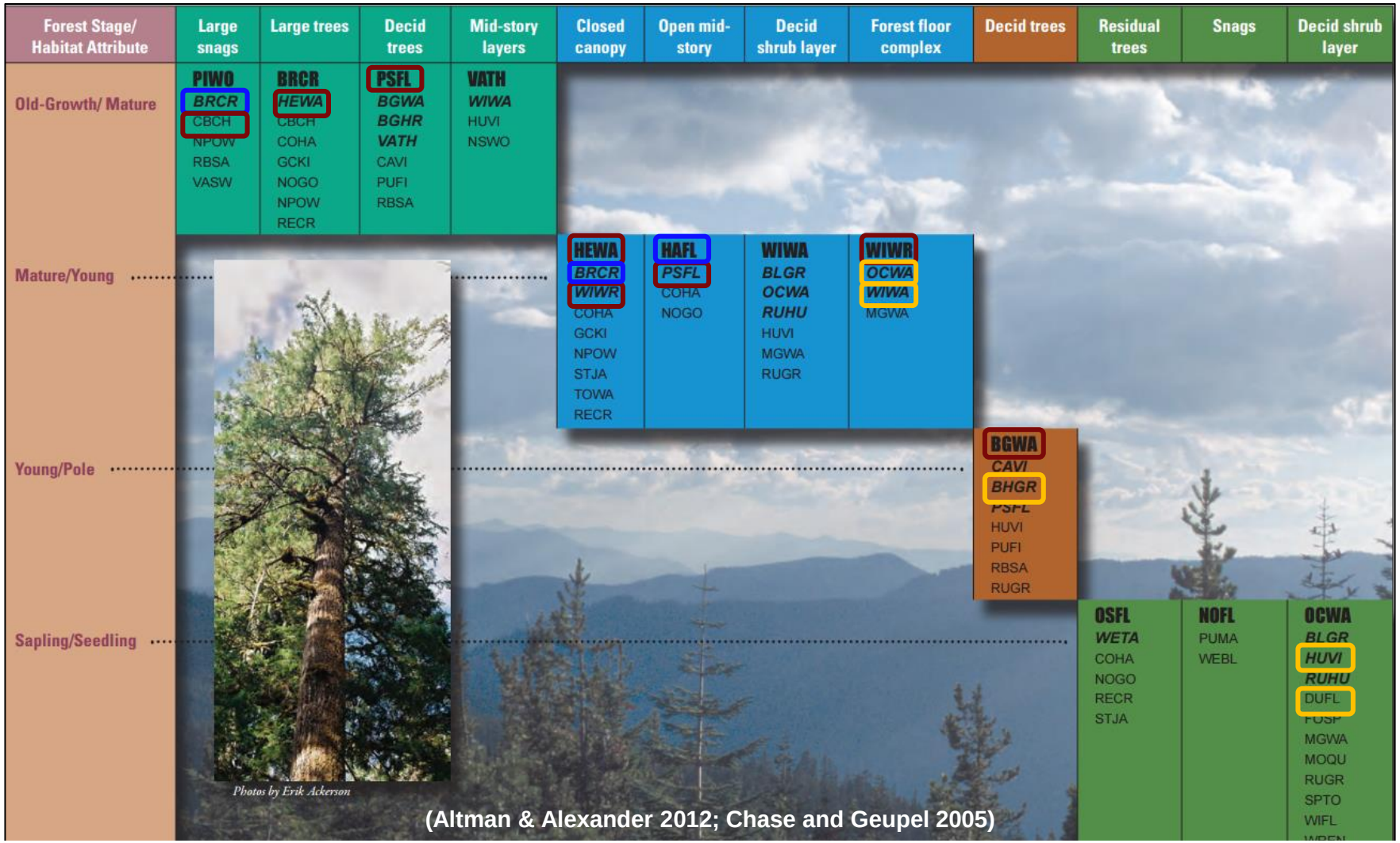
Low volume conifer
Mountain Chickadee
Green-tailed Towhee

Chapparal and Oak woodland
Bewick's Wren
Bullock's Oriole
California Towhee
Lesser Goldfinch
Western Scrub-Jay
Western Wood-pewee
White-breasted Nuthatch

*** Oregon-Washington PIF Focal Species (Western Coniferous Forests)**

(Betts et al. 2010; Seavy and Alexander 2011; Altman and Alexander 2012)

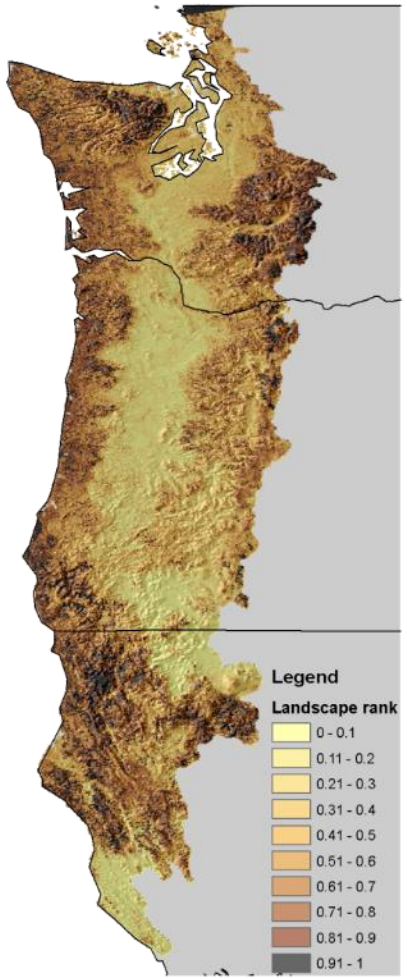
Focal Species – Habitat Attributes

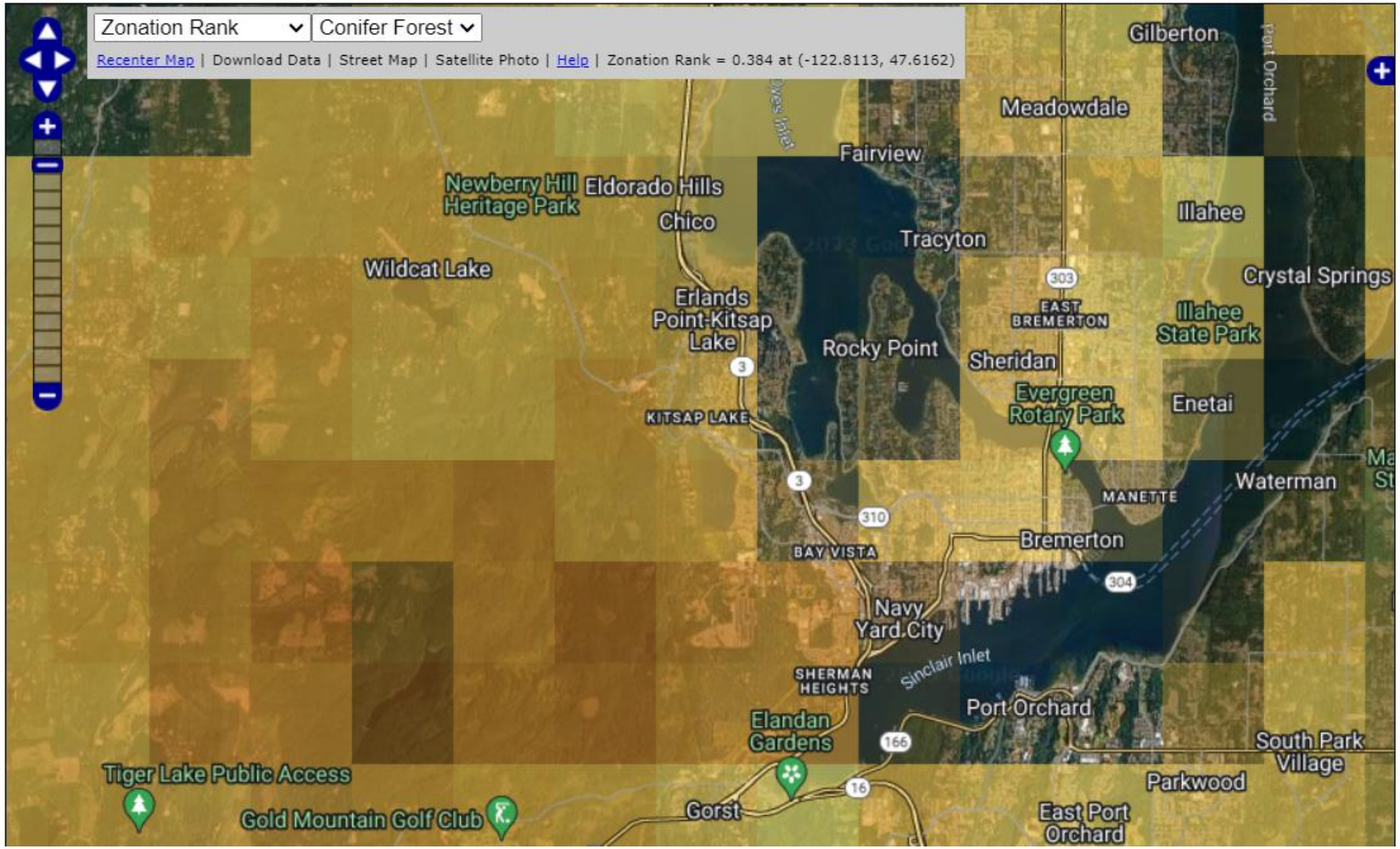


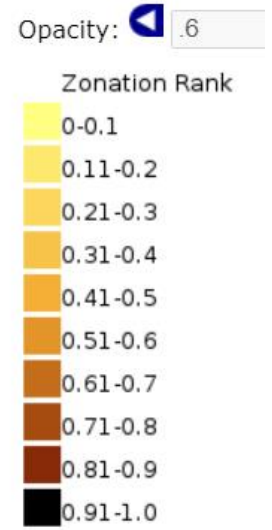
Quantitative Habitat and Population Objectives

Pacific Northwest Climate Distribution Models

www.AvianKnowledgeNorthwest.net/PNWClimateVulnerability



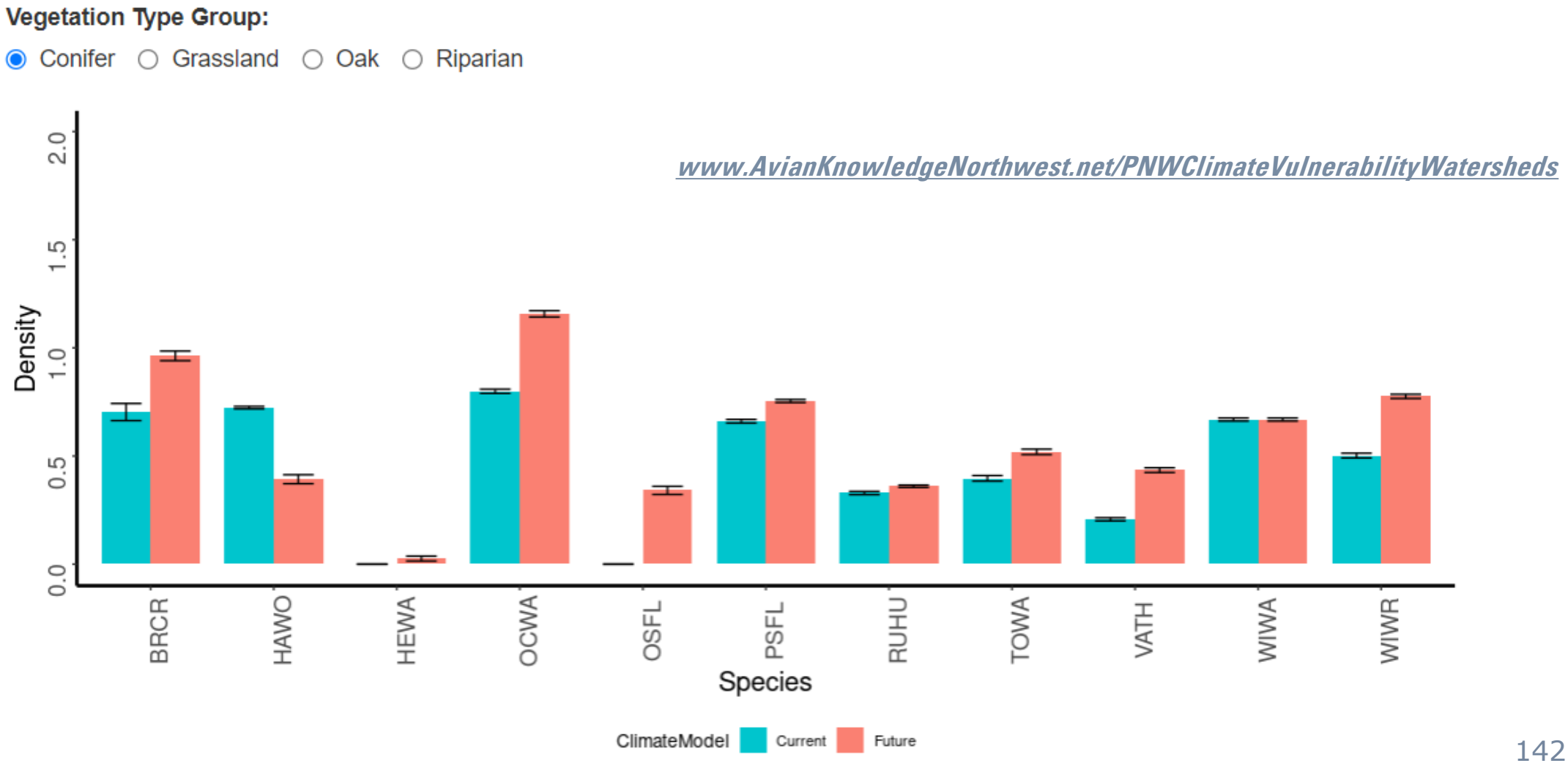




(Veloz et al. 2013, 2015,)

Pacific Northwest Climate Distribution Models

Watershed Summaries



www.AvianKnowledgeNorthwest.net/PNWClimateVulnerabilityWatersheds

(Altman & Alexander 2012; Veloz et al. 2013, 2015)

Pacific Northwest Climate Distribution Models

Watershed Summaries

Vegetation Type Group:

(●) Conifer ( ) Grassland ( ) Oak ( ) Riparian

Brown Creeper

Habitat Objectives

Landscapes: At small landscape scales (e.g., watersheds, townships, sections), provide ≥3 blocks of late successional forest >30 ha (75 ac) or one block >85 ha (210 ac) per square mile with site-level habitat conditions as described below.

Sites: Where ecologically appropriate in forests >60 years old provide

– canopy closure >70%

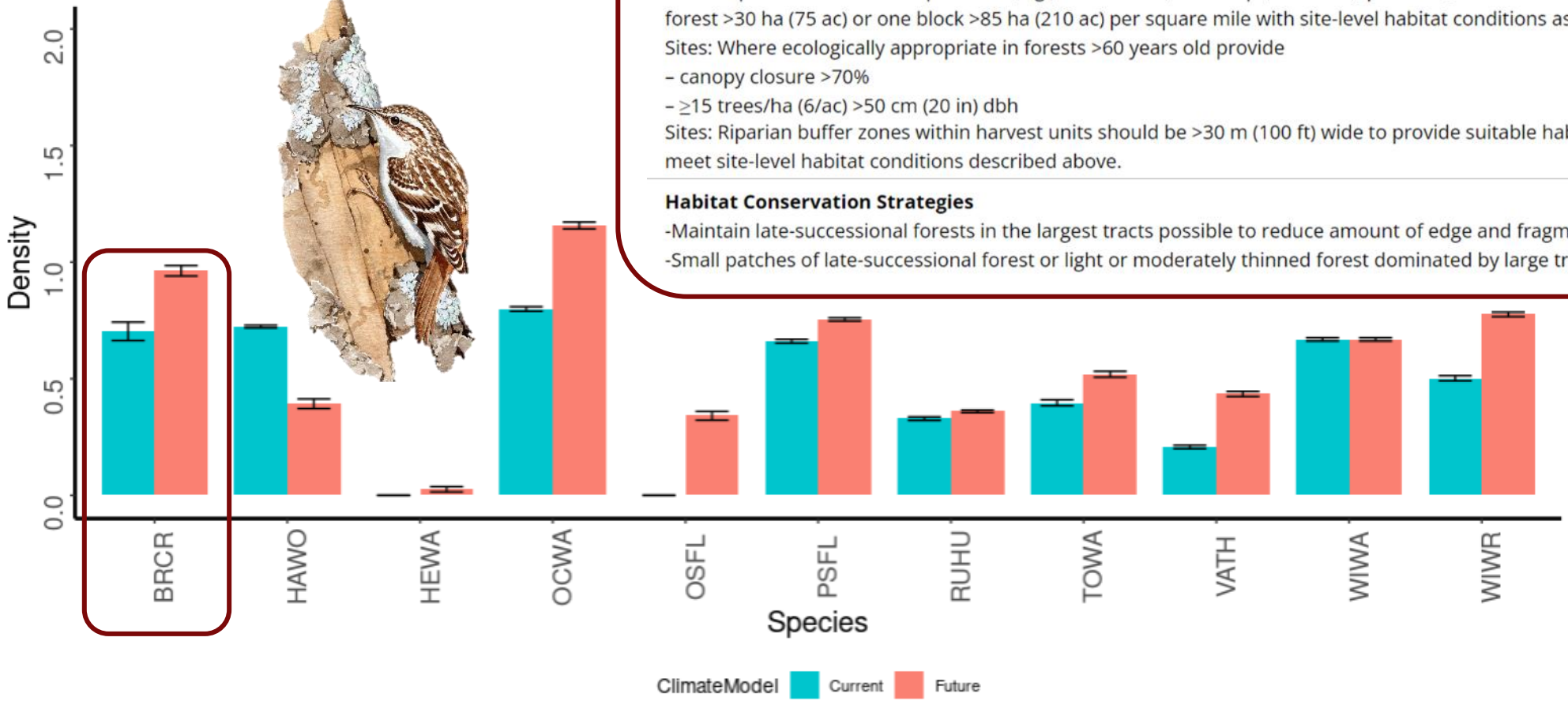
– ≥15 trees/ha (6/ac) >50 cm (20 in) dbh

Sites: Riparian buffer zones within harvest units should be >30 m (100 ft) wide to provide suitable habitat and should meet site-level habitat conditions described above.

Habitat Conservation Strategies

-Maintain late-successional forests in the largest tracts possible to reduce amount of edge and fragmentation.

-Small patches of late-successional forest or light or moderately thinned forest dominated by large trees can be suitable



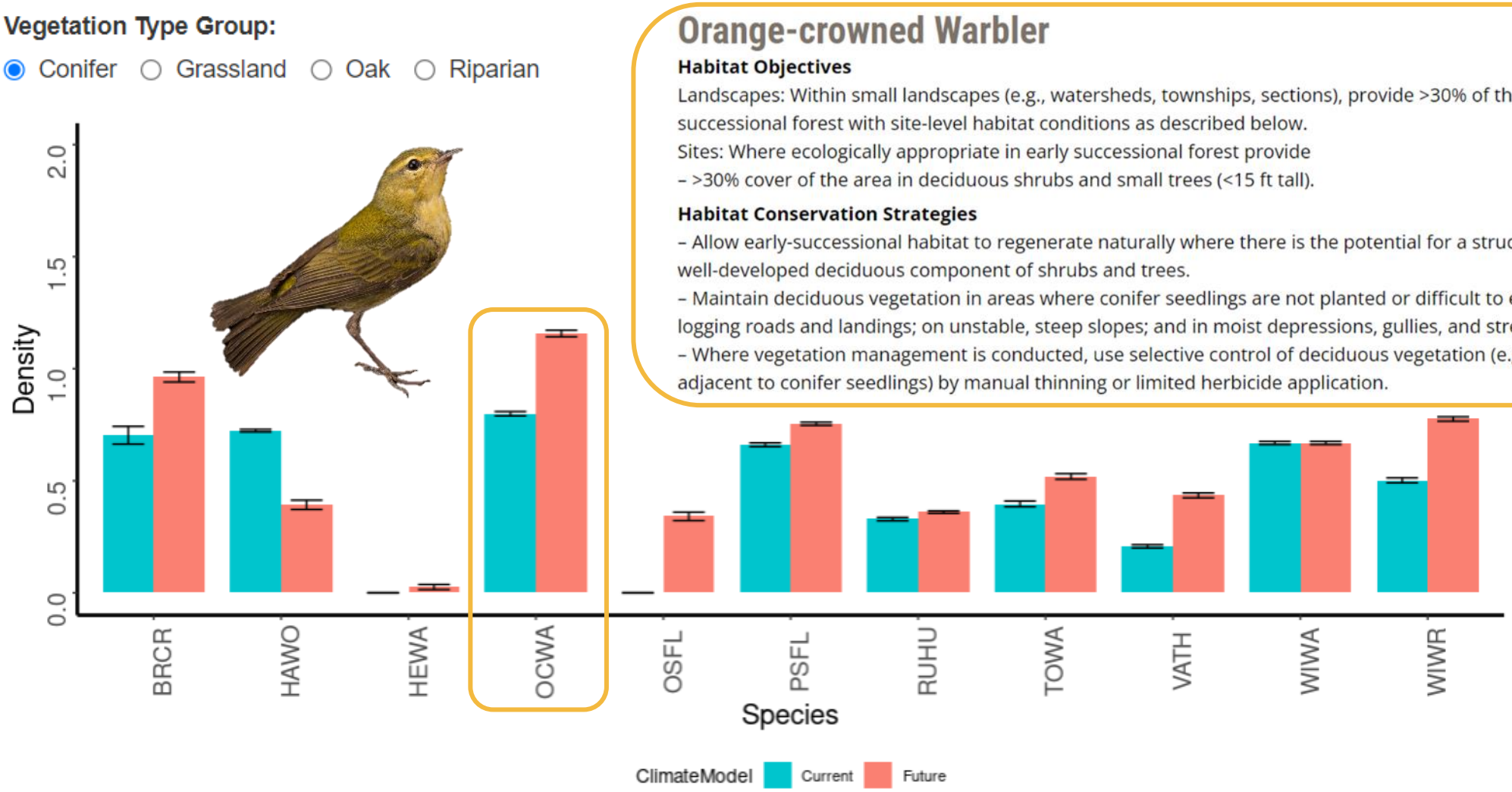
(Altman & Alexander 2012; Veloz et al. 2013, 2015)

Pacific Northwest Climate Distribution Models

Watershed Summaries

Vegetation Type Group:

(●) Conifer ( ) Grassland ( ) Oak ( ) Riparian



Orange-crowned Warbler

Habitat Objectives

Landscapes: Within small landscapes (e.g., watersheds, townships, sections), provide >30% of the area as early successional forest with site-level habitat conditions as described below.

Sites: Where ecologically appropriate in early successional forest provide

– >30% cover of the area in deciduous shrubs and small trees (<15 ft tall).

Habitat Conservation Strategies

– Allow early-successional habitat to regenerate naturally where there is the potential for a structurally complex and well-developed deciduous component of shrubs and trees.

– Maintain deciduous vegetation in areas where conifer seedlings are not planted or difficult to establish such as along logging roads and landings; on unstable, steep slopes; and in moist depressions, gullies, and stream courses.

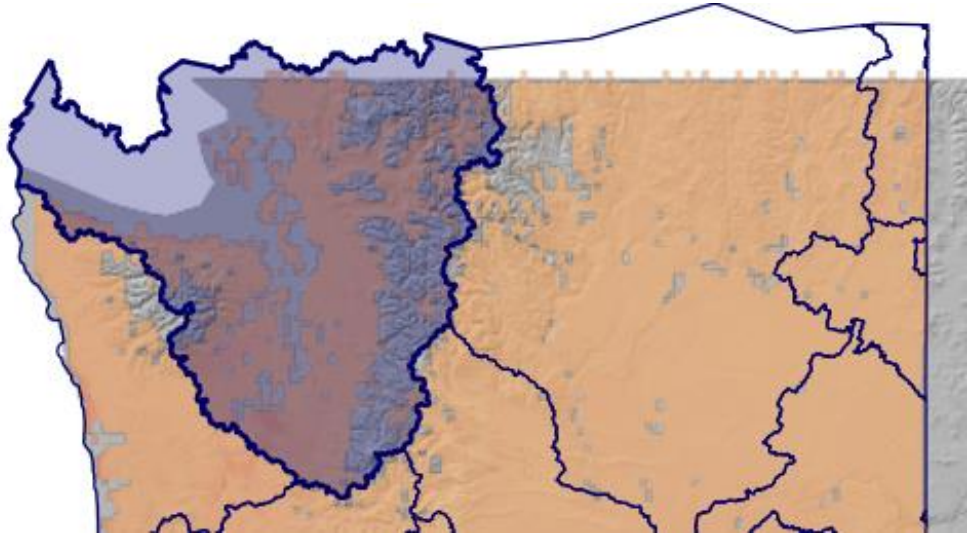
– Where vegetation management is conducted, use selective control of deciduous vegetation (e.g., immediately adjacent to conifer seedlings) by manual thinning or limited herbicide application.

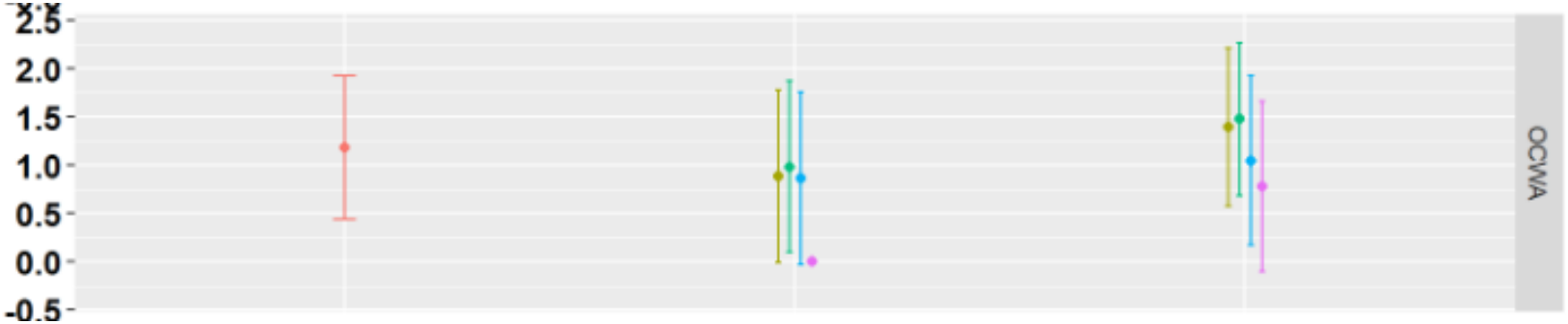
(Altman & Alexander 2012; Veloz et al. 2013, 2015)

Pacific Northwest Climate Distribution Models

Oregon/Washington

Climate, vegetation and bird model summary report: Puget Sound Watershed





Brown Creeper

Variable Importance Table

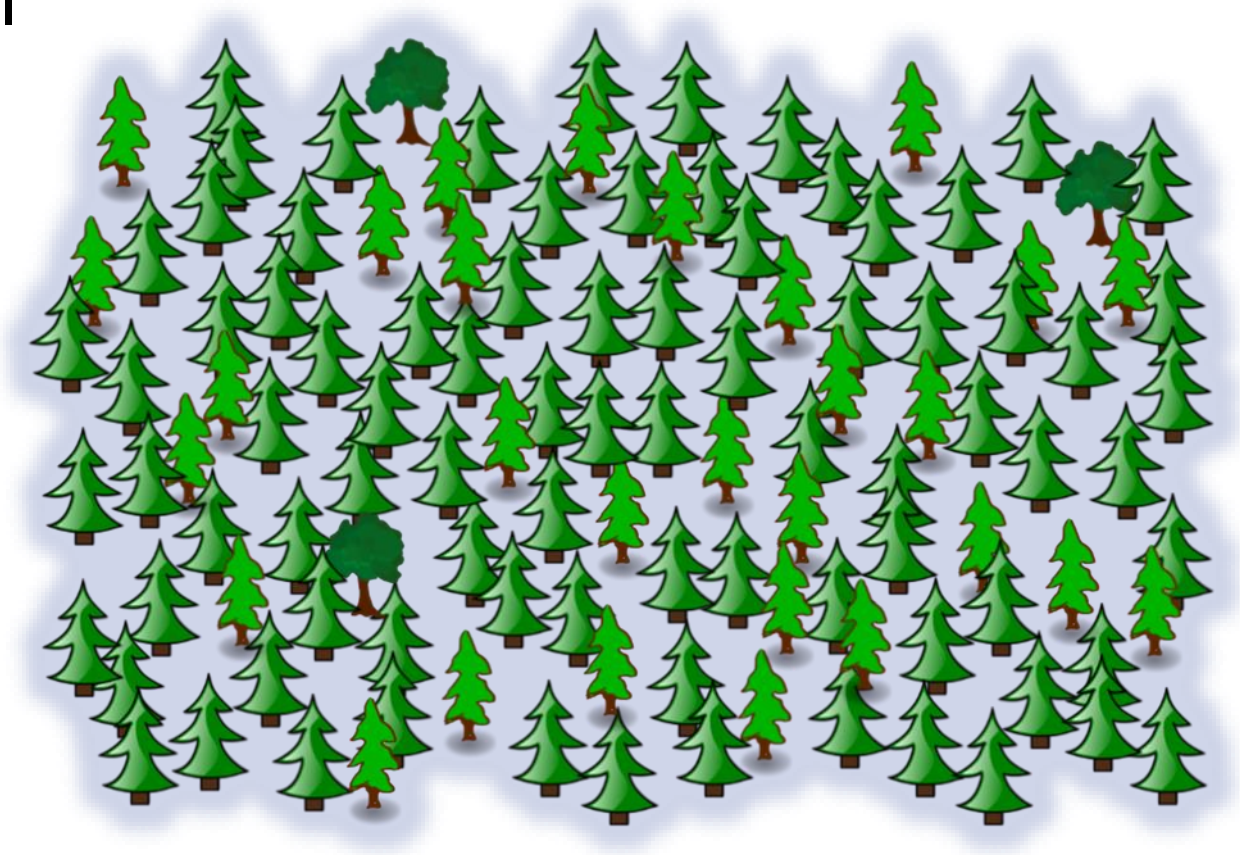
15.95	Mediterranean California Mesic Mixed Conifer Forest and Woodland
14.59	Minimum of monthly minimum temperatures (April-July)
12.52	Temperature Range (April-July)
12.4	California Coastal Redwood Forest
9.85	California Montane Jeffrey Pine-(Ponderosa Pine)
9.76	North Pacific Oak Woodland

SF Stillaguamish Vegetation Project

Using birds as indicators of habitat objectives

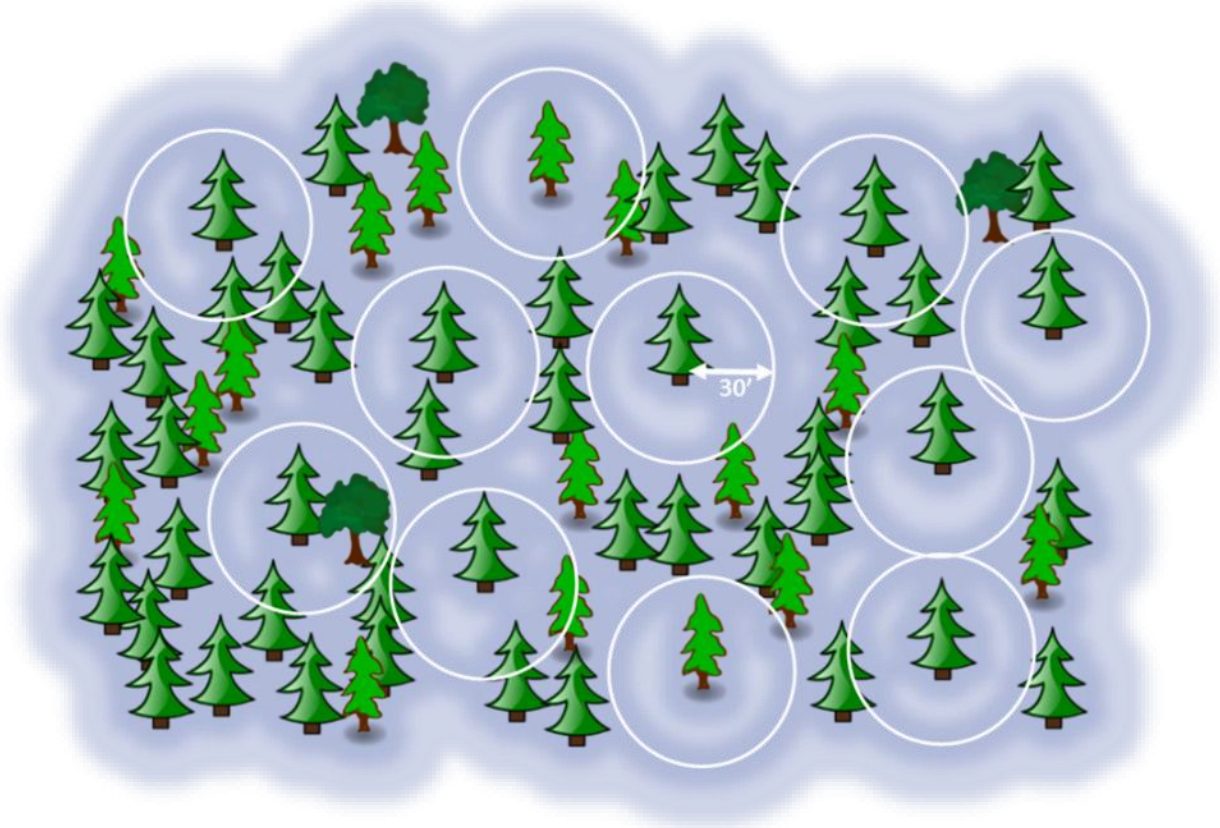
"Focus Tree" Thinning Prescription

- Variable Density with Minimal Marking
- Mark 10 Trees per Acre
- Cut everything within 30' of marked trees
- Retain hardwoods

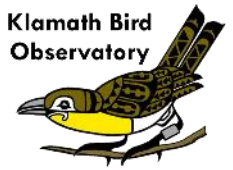


"Focus Tree" Thinning Prescription

- Variable Density with Minimal Marking
- Mark 10 Trees per Acre
- Cut everything within 30' of marked trees
- Retain hardwoods



DISCOVERING OBSERVATION DATA



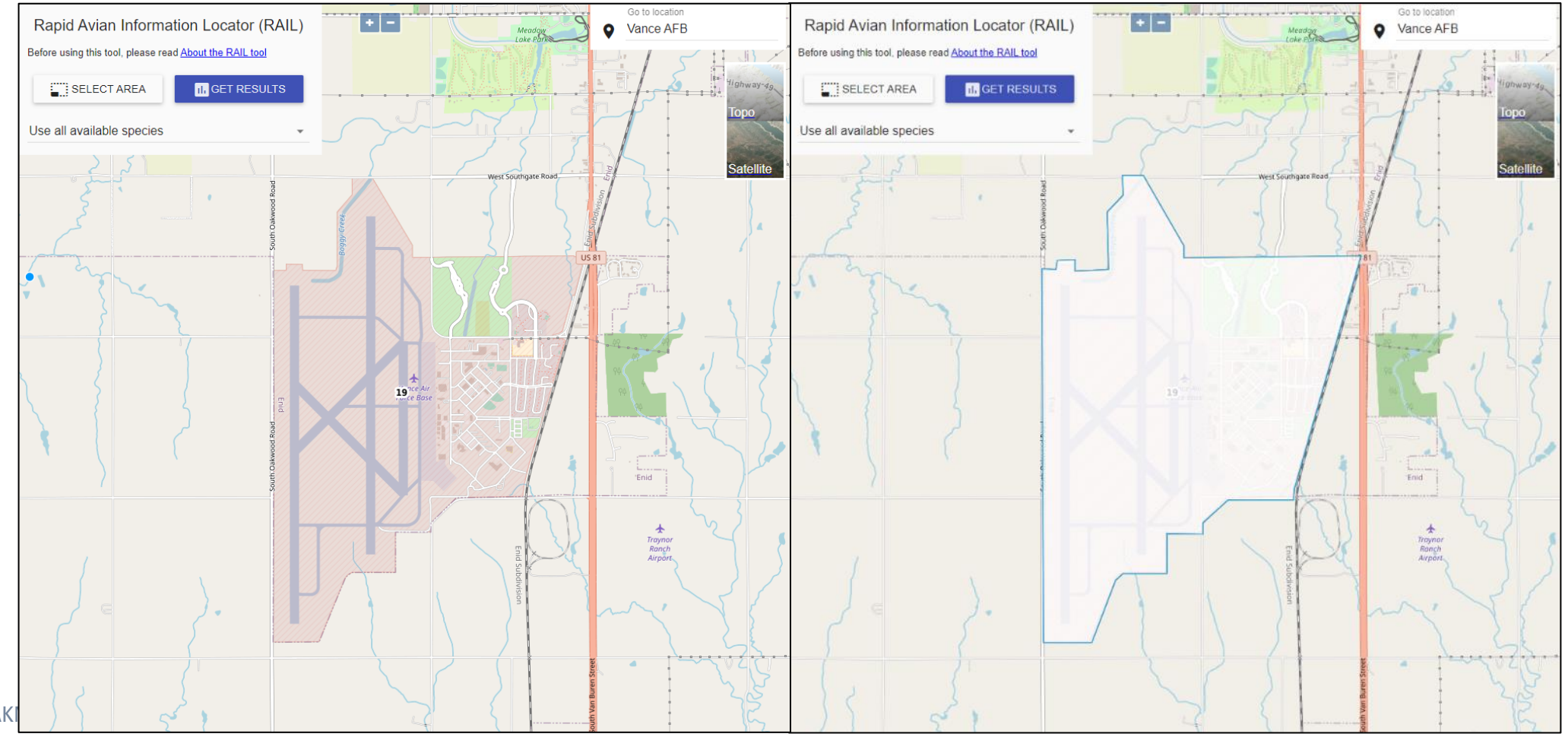
EXAMPLE: R.A.I.L. TOOL
VANCE AIR FORCE BASE, OK

- Biologist was new to AF and did not have any bird data
- Wanted a list of birds on Vance for NEPA and INRMP updates
- RAIL tool available at no cost and without an account

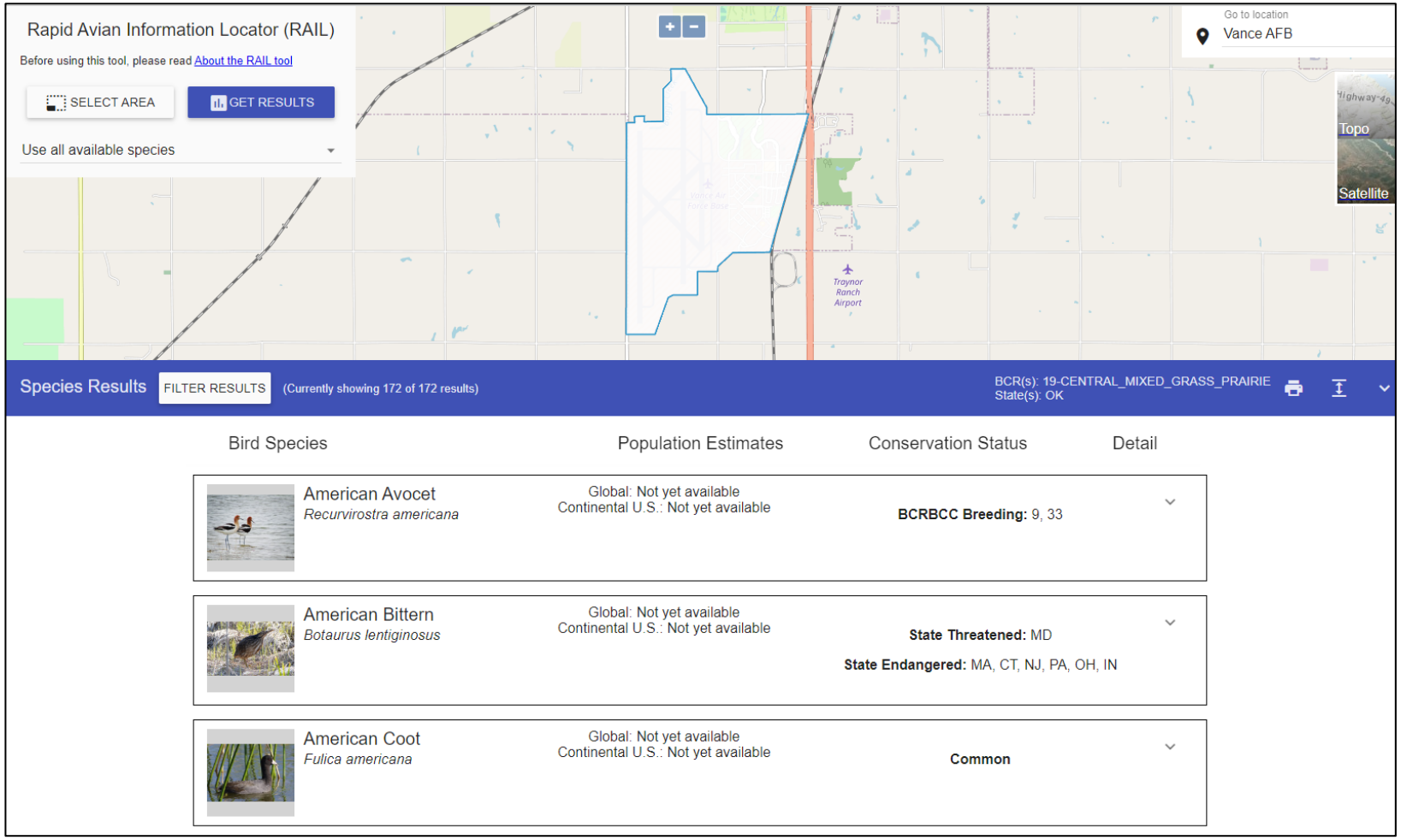
  Integrates data from AKN, Partners in Flight, US Fish and Wildlife, Breeding Bird Survey, eBird, All About Birds, and the Macaulay image library at Cornell

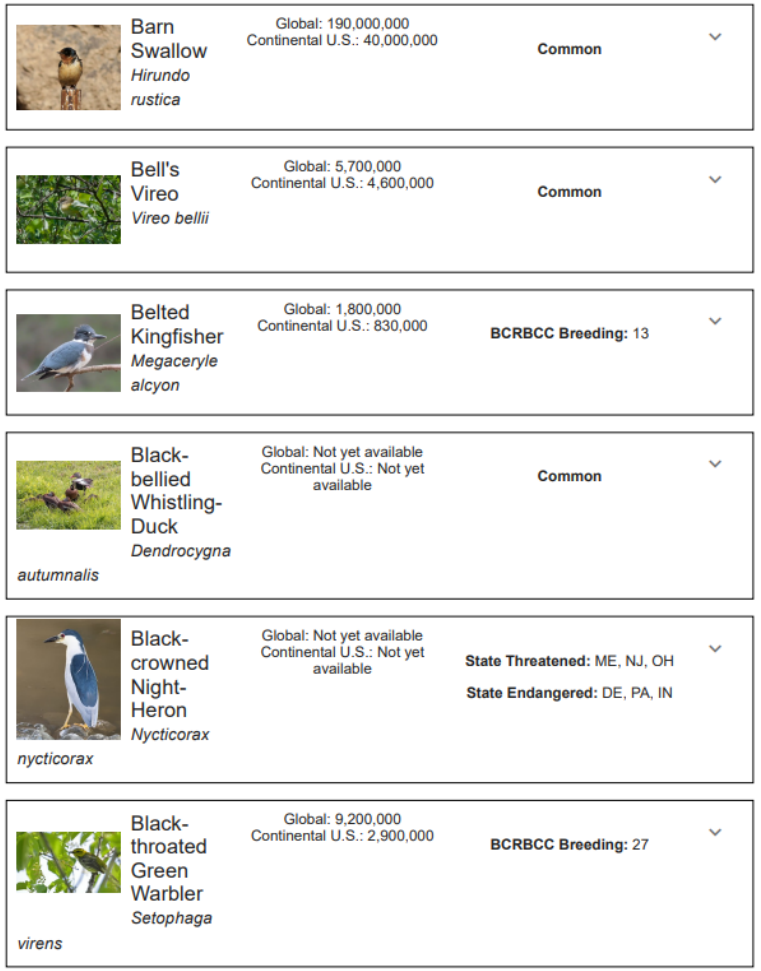
https://data.pointblue.org/apps/rail/

EXAMPLE: R.A.I.L. TOOL
VANCE AIR FORCE BASE, OK

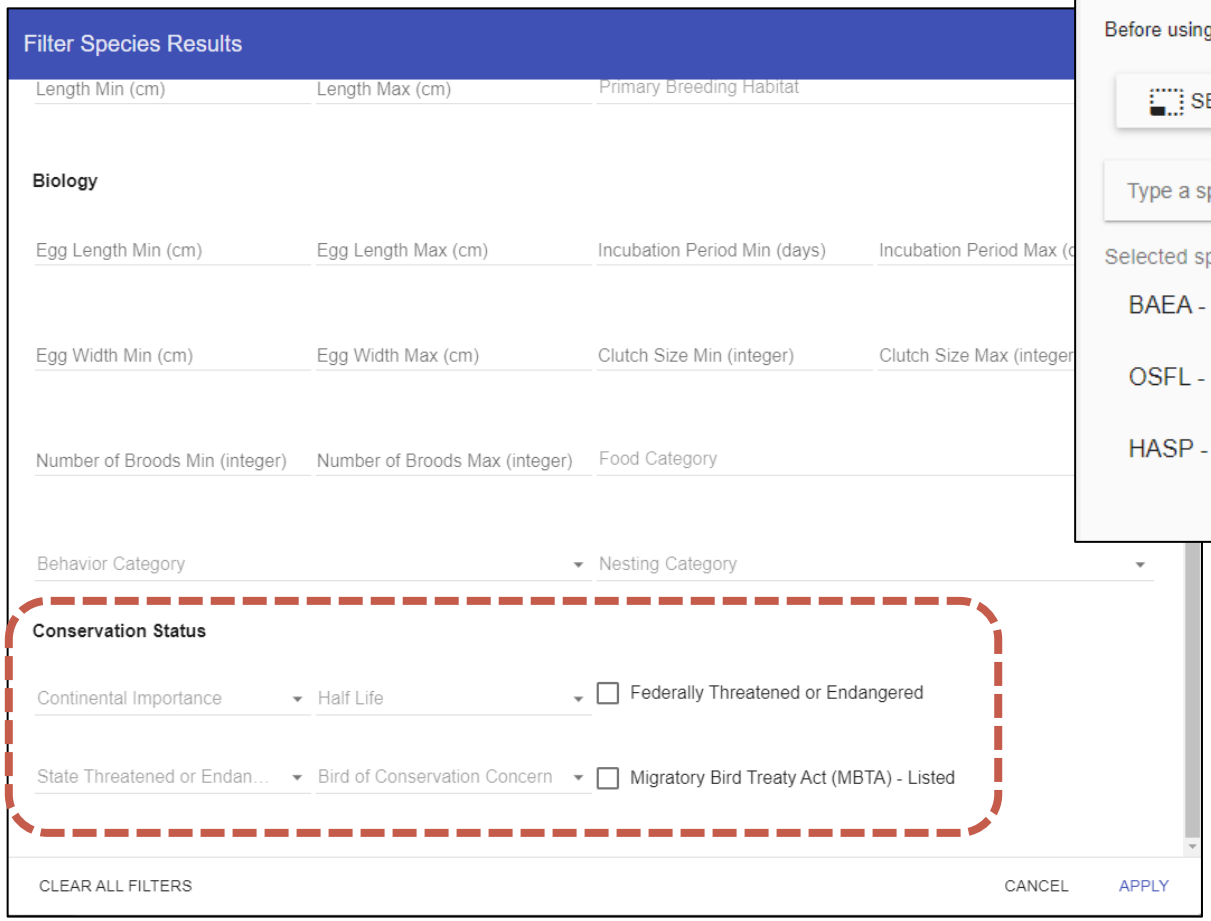


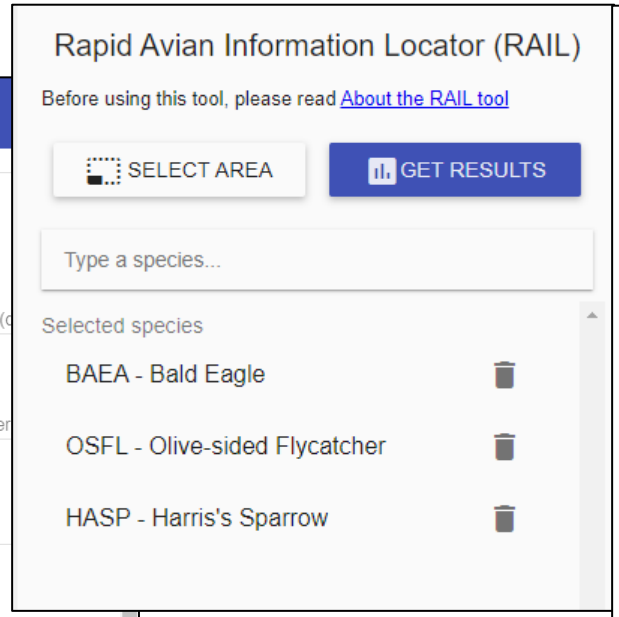
EXAMPLE: R.A.I.L. TOOL
VANCE AIR FORCE BASE, OK

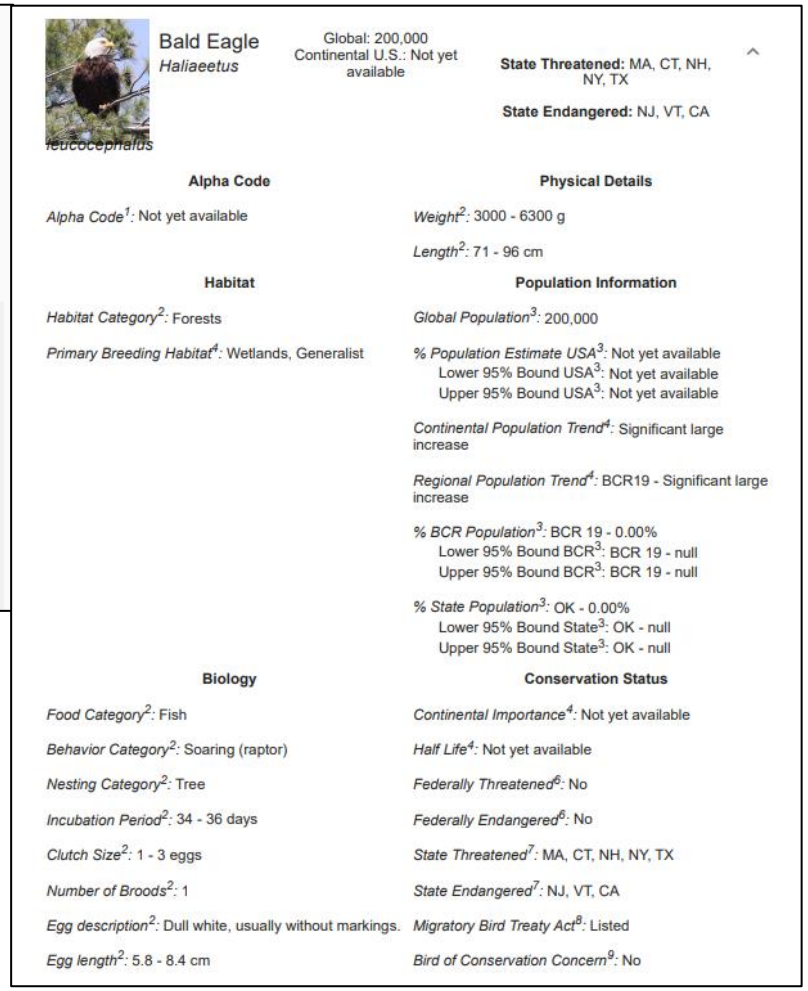




EXAMPLE: R.A.I.L. TOOL
VANCE AIR FORCE BASE, OK







EXERCISE 4: CREATE A SPECIES LIST WITH THE R.A.I.L. TOOL

CREATE A SPECIES LIST WITH THE R.A.I.L. TOOL

EXERCISE 4

Purpose: Get familiarized with the RAIL tool, which can help you find general information about the species in a particular area and their conservation status

Goal: Be comfortable navigating the RAIL tool to find information about species on your installation and understand the limitations of the tool

Thinking Ahead: Consider how RAIL might be helpful for your analyses and reporting

6c. Analyze Observations

CREATE A SPECIES LIST WITH THE R.A.I.L. TOOL

EXERCISE 4

Exercise:

- Orientation of **R.A.I.L. Tool**
- **Exercise 4 instructions**

6c. Analyze Observations

DOWNLOAD POINT COUNT DATA FROM WAREHOUSE

DEMONSTRATION

Tools:

- **Data Downloader**

CASE STUDY:

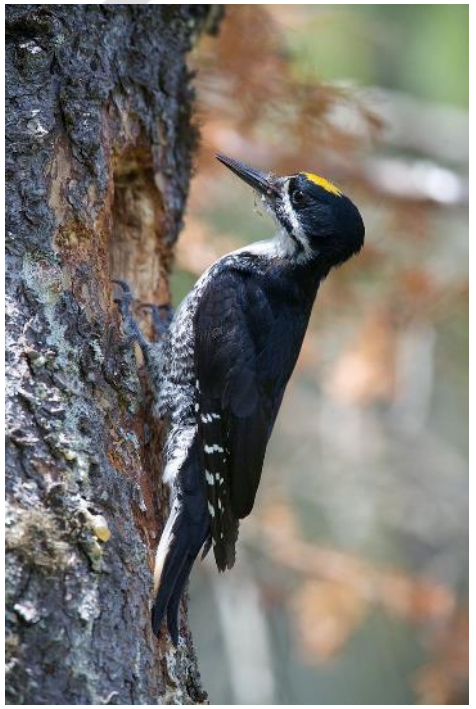
MAKING FOREST MANAGEMENT MORE EFFICIENT

USDA

Region 5 Post-Disturbance Hazardous Tree Management Project

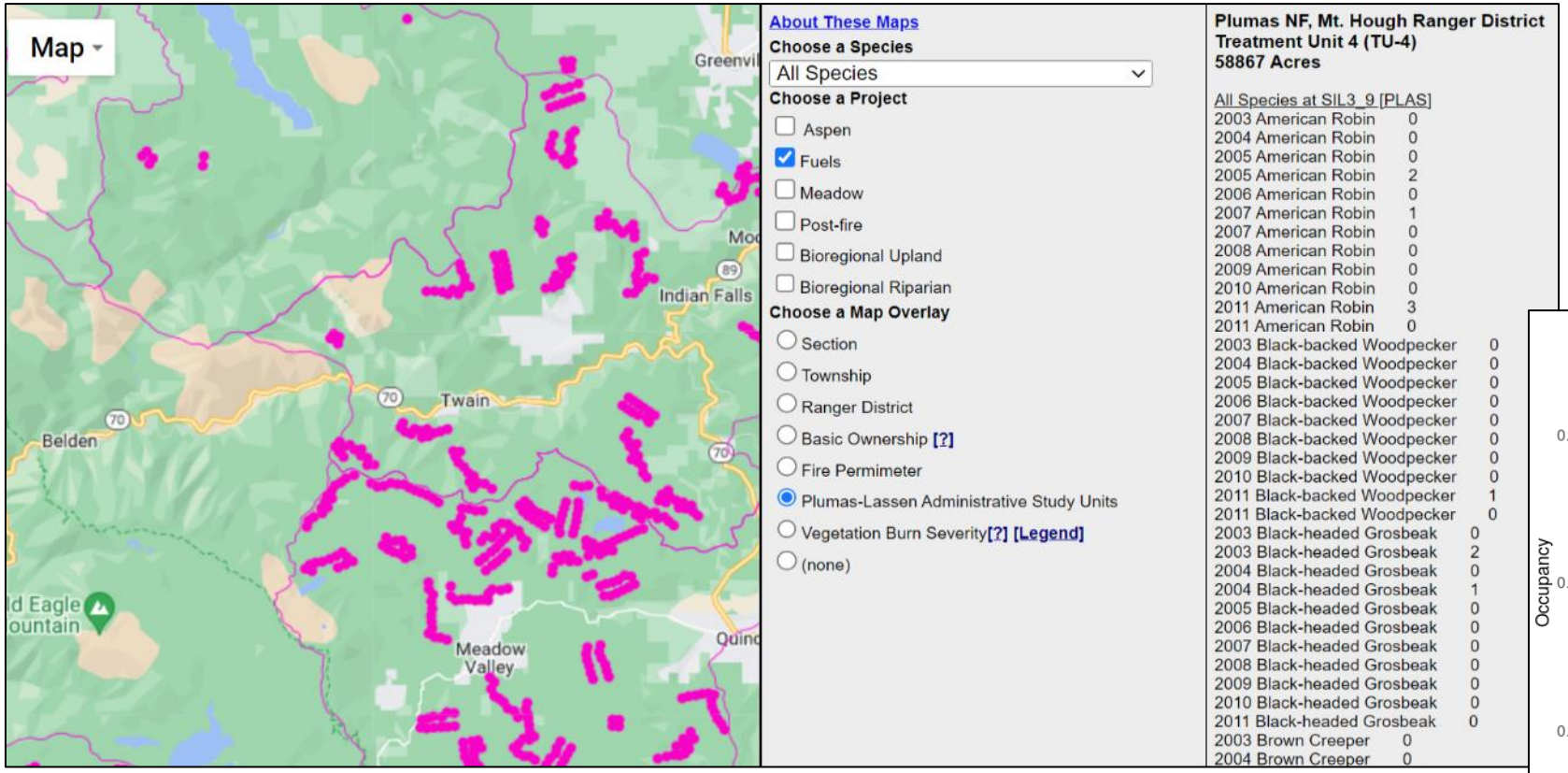
Management Indicator Species Report

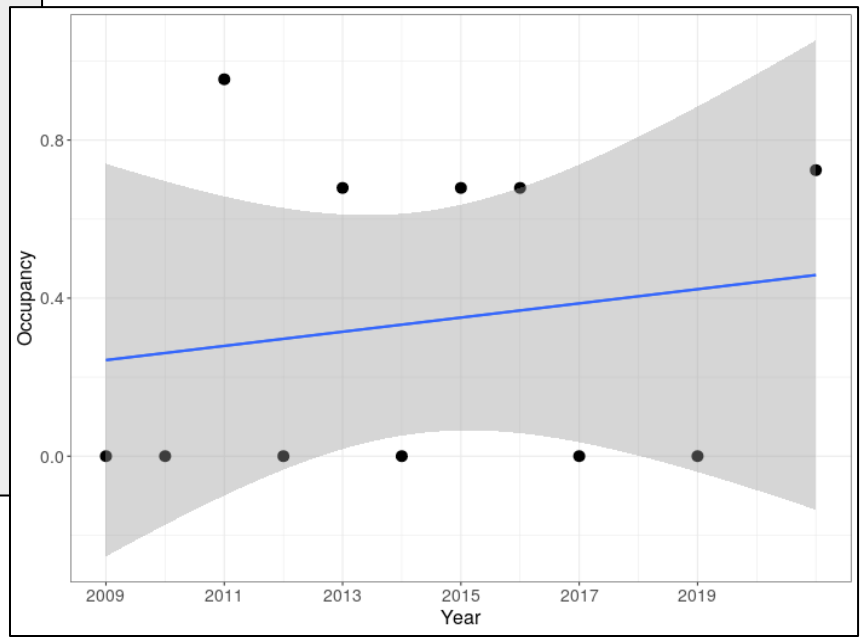
Prepared by: Angela Gatto, Wildlife Biologist
For: Lassen and Plumas National Forests
Date: March 2022



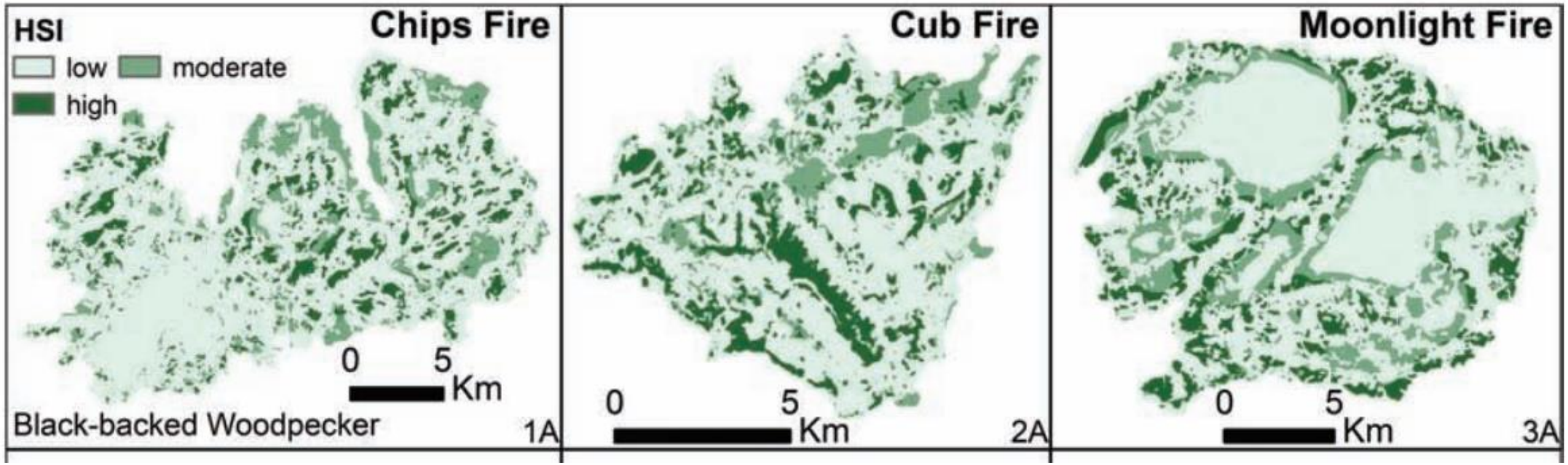
https://data.pointblue.org/apps/snamin/

AKN TOOLS GUIDE FOREST MANAGEMENT





AKN TOOLS FOCUS FUTURE STUDIES

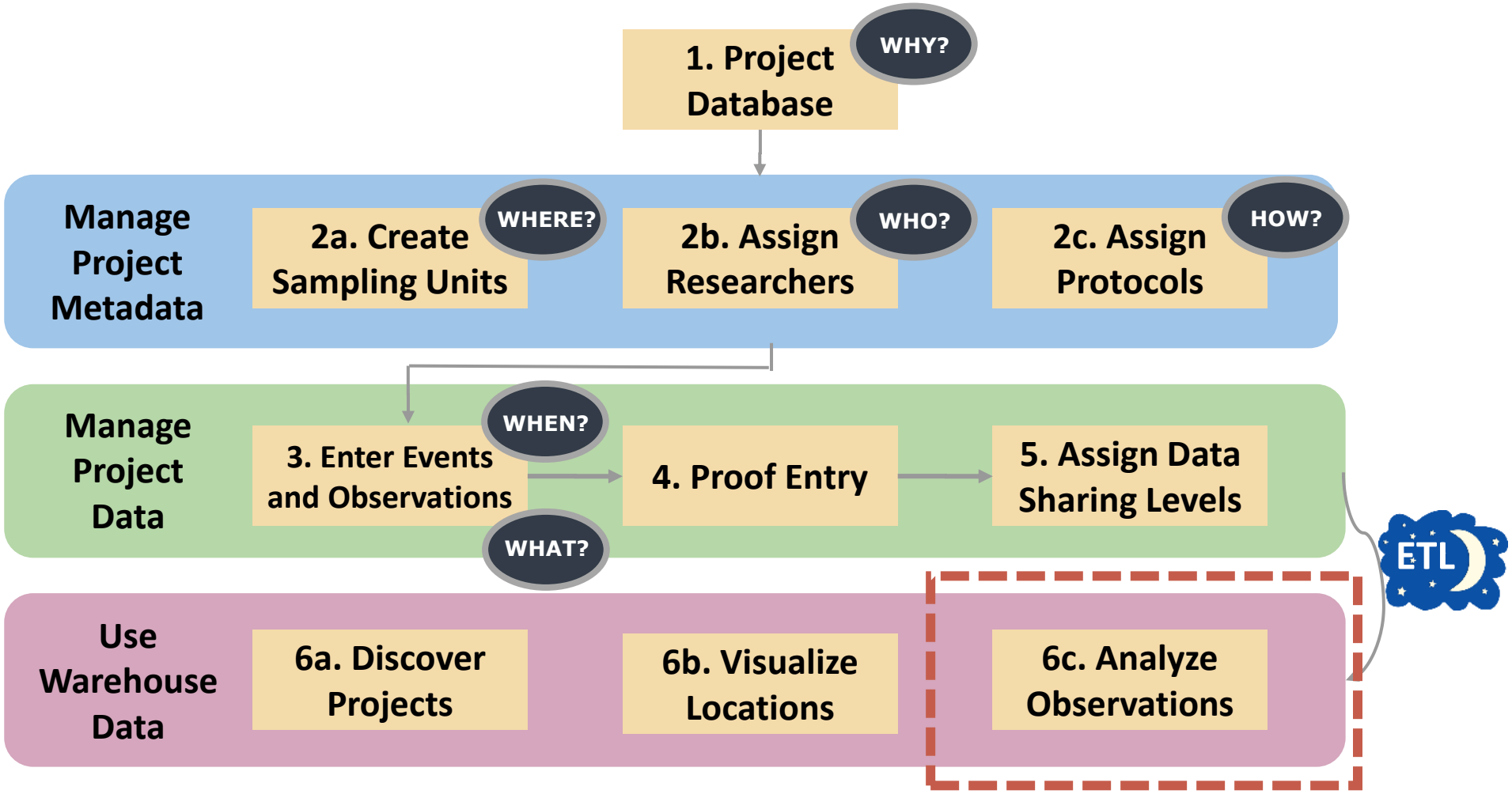


Campos et al. 2020. Predictive habitat suitability models for nesting woodpeckers following wildfire in the Sierra Nevada and Southern Cascades of California

BREAK (15 MINS)

NEXT: LOOKING FOR TRENDS

MANAGING A PROJECT: LOOKING FOR TRENDS

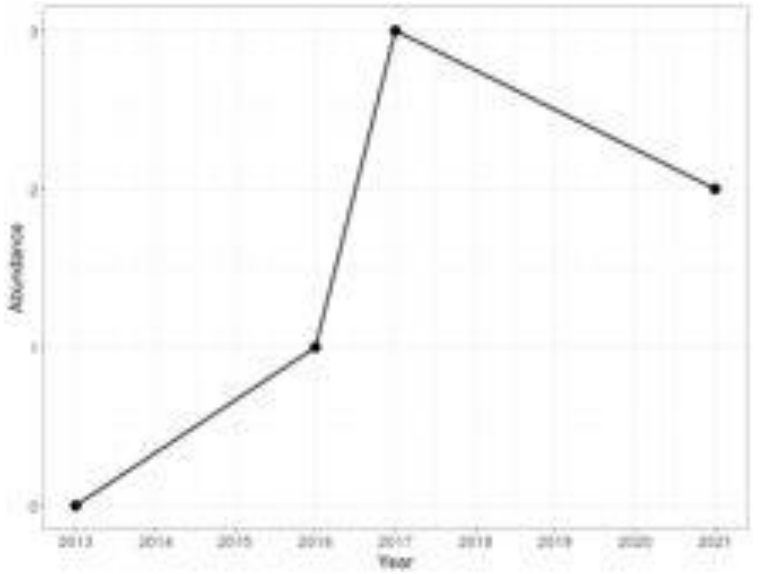


USING THE ANALYST TOOL
DEMONSTRATION

Tools:

- https://data.pointblue.org/apps/analysts/

Common Name	2013	2014	2015	2016	2017	2021
Acadian Flycatcher	6	11	25	12	14	15
Alder Flycatcher	0	0	0	0	1	0
American Crow	41	28	42	29	24	113
American Goldfinch	14	1	5	6	3	16
American Redstart	0	1	0	1	1	2
American Robin	0	0	0	0	1	0
Barred Owl	0	0	0	0	0	1



LOOKING FOR TRENDS

EXERCISE 5

LOOKING FOR TRENDS
EXERCISE 5

Purpose: Introduce you to more data exploration and discovery tools

Goal 1: Be comfortable searching the Data Catalog to find available datasets and project metadata

Goal 2: Understand how to use the Observations Map to find survey locations from different datasets for a particular species and examine species trends

Thinking Ahead: Consider how Data Catalog might be helpful for archiving information about your project, and how Observations Map may be helpful for your analyses and reporting

LOOKING FOR TRENDS
EXERCISE 5

- Exercise:
  - Orientation of **Data Catalog** and **Observation Map**
  - **Exercise 5 instructions**

WHAT SHOULD YOU EXPECT THIS YEAR WITH AKN AND DoD PARTICIPATION?

LEGAL DRIVERS

- Migratory Bird Treaty Act (PL 65-186; 16 USC 703 *et seq*.)
- Sikes Act (PL 105-85, as amended through 2004 including PL 108-136; 16 USC 670 *et seq*.)
- Executive Order 13186 *Responsibilities of Federal Agencies to Protect Migratory Birds*
- National Environmental Policy Act, as amended. (PL. 91-190, 42 U.S.C. 4321-4347, as amended by Pub. L. 94-52)
- Endangered Species Act (16 U.S.C. 1531-1544, 87 Stat. 884), as amended – PL. 93-205
- DoD Instruction 4715.03, *Natural Resources Conservation Program*
  - Prioritize species
  - Facilitate and encourage collaboration with partners
  - Focus research and planning efforts
  - Increase information sharing

DOD AKN STRATEGIC APPROACH

- DoD AKN Program Management Plan
- OSD and Military Services Support
- Status of DoD Data
- Data Initiatives
- DoD-Specific and AKN Tools
- Priority Tasks for FY24

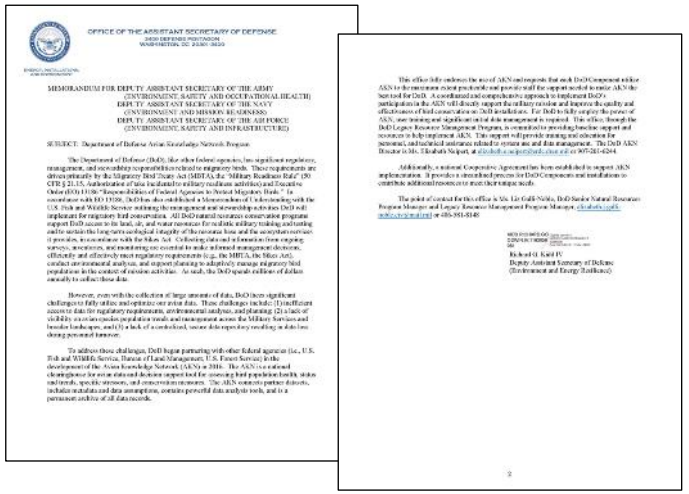
Photo: Eric Ellingson

DoD AKN Program

Task Categories

OSD AND MILITARY SERVICES SUPPORT

- ***Office of Secretary of Defense and Military Service Support***
  - Ryan Orndorff and Liz Galli-Noble-Office of Secretary of Defense
  - Karla Meyer & Kirsten Christopherson-Air Force
  - Brian Moyer & Steve Sekscienski-Army
  - Jacque Rice-Marine Corps
  - Jeff Gardner & Tom Mayes-Navy
  - Alisa Dickson & Jay Rubinoff-National Guard
- ***DoD Support Memo***
  - Signed 24 June 2022
  - Mandate use DoD-wide
- ***DoD-wide Cooperative Agreement***
  - Allows oversight of all AKN actions
  - Cost-share actions
  - Enable Military Services and installations to empower smaller amounts of $$
  - Allows MIPR for funding our program partners



MILITARY SERVICE ACTIONS – FY23

Air Force

- ✓ One virtual and one in-person training
- ✓ USDA BASH data workflow
- ✓ GIS data workflow
- ✓ MSS Tool
- ✓ Implicit/explicit zero data
- ✓ Priority data uploads/support
- ✓ Methodology consulting for INRMP objectives

Navy

- ✓ Data prioritization
- ✓ Project creation
- ✓ Data support and upload

National Guard

- ✓ ARNG-specific training, held 23-25 May, hosted by ORARNG
- ✓ Data Discovery Survey
- ✓ Work with states for other tasks

Marine Corps

- ✓ Funding for Program Enterprise
- ✓ Initial funding for:
  - Contractor Role
  - MSS Query Tool
- ✓ Data Discovery Survey
- ✓ MSS monitoring & data support
- ✓ Historical & contemporary data support
- ✓ Training at OCONUS site

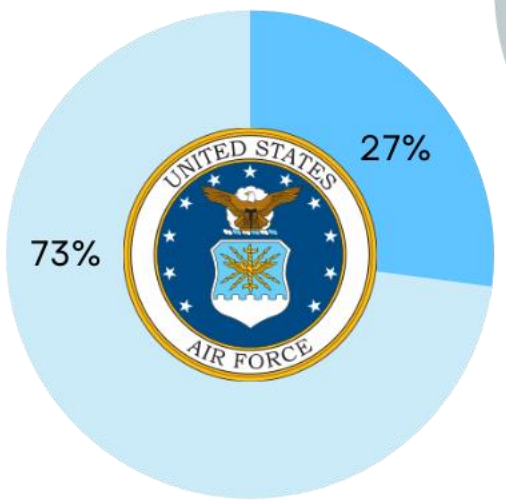
Army

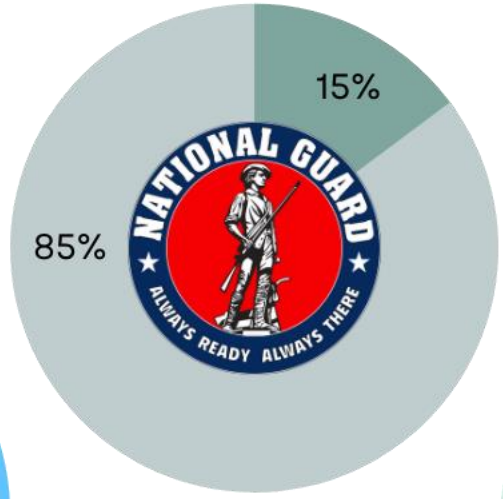
- ✓ Data Discovery and Training Survey – *in progress*
- ✓ Building a 5-year plan

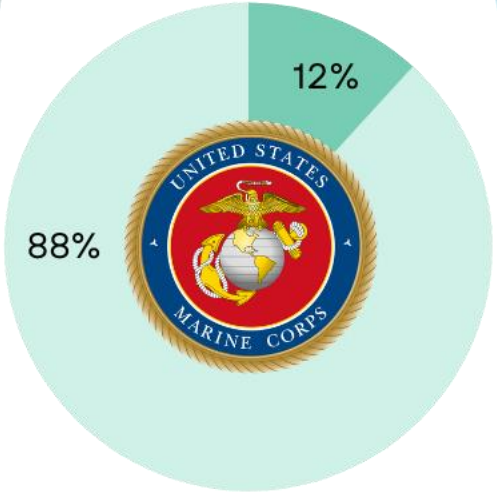
MILITARY SERVICE PROGRESS

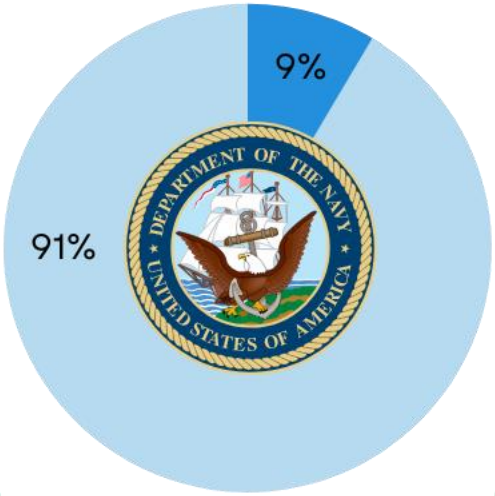
Installations with Active Projects by Service Branch

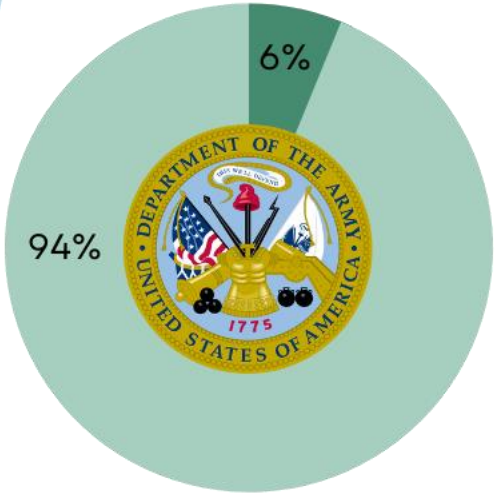
MARCH 2023









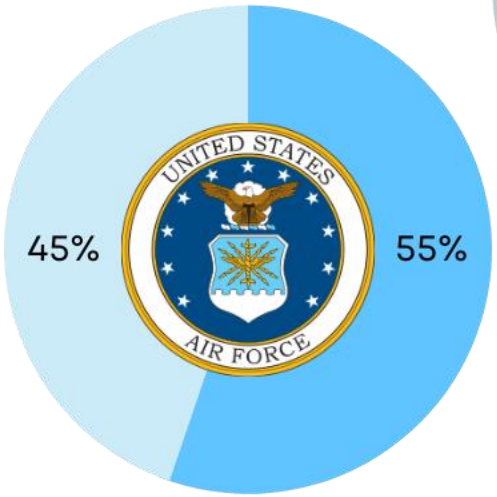


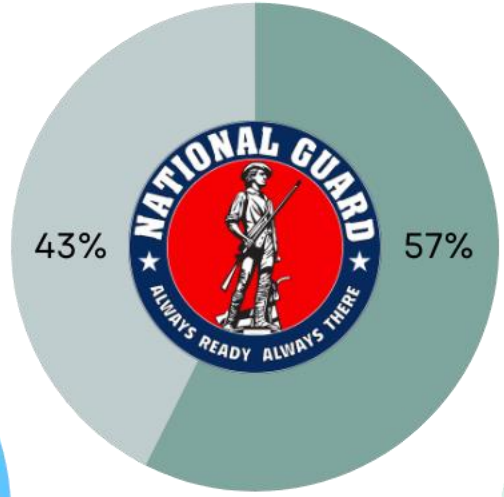
341 installations that require **Integrated Natural Resources Management Plans**

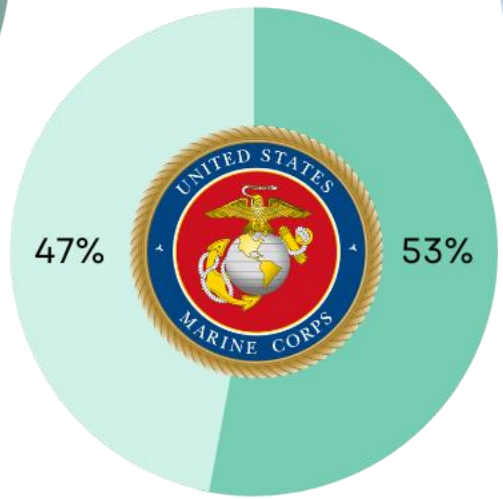
MILITARY SERVICE PROGRESS

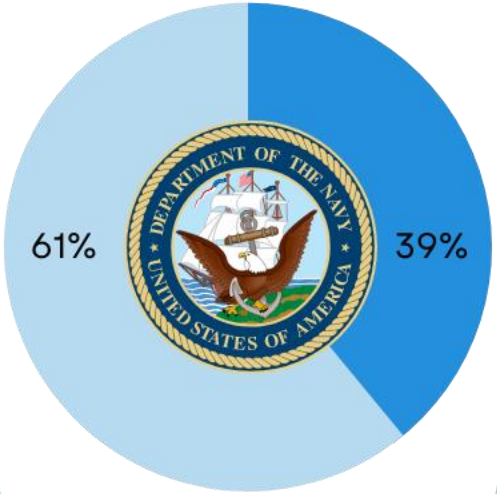
Installations with Active Projects by Service Branch

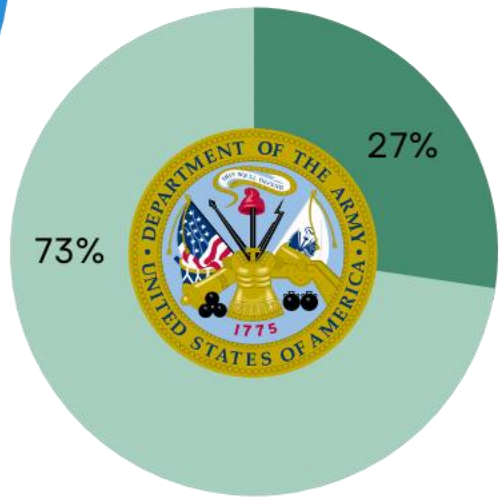
TODAY









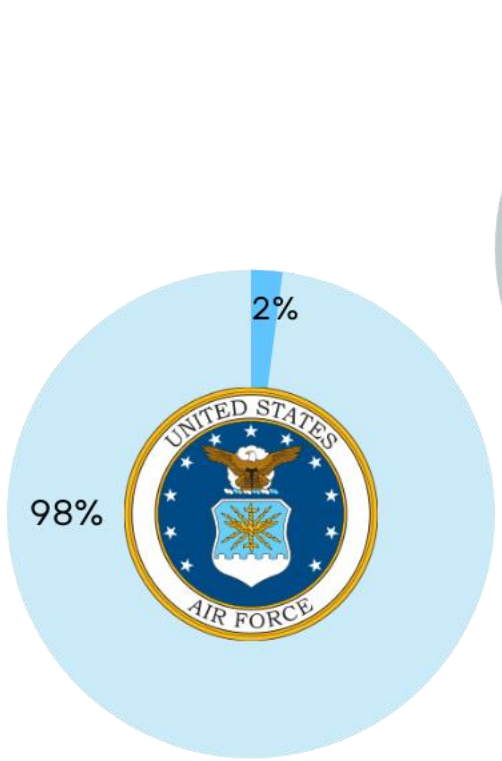


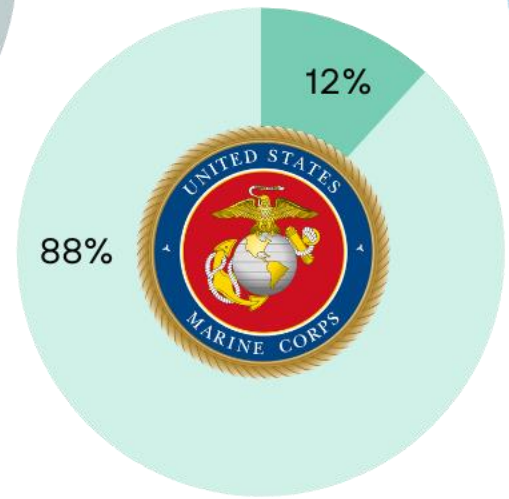
341 installations that require **Integrated Natural Resources Management Plans**

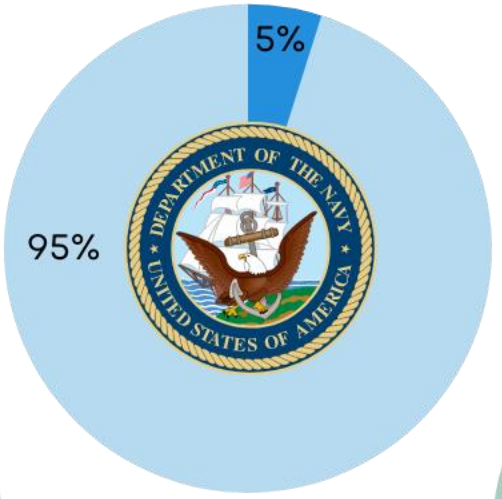
MILITARY SERVICE PROGRESS

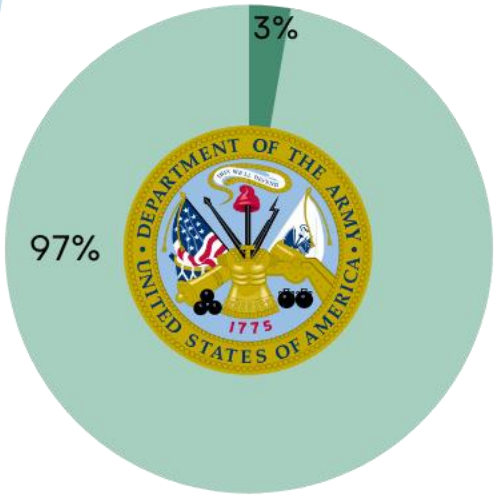
Installations with Contemporary Data by Service Branch

MARCH 2023







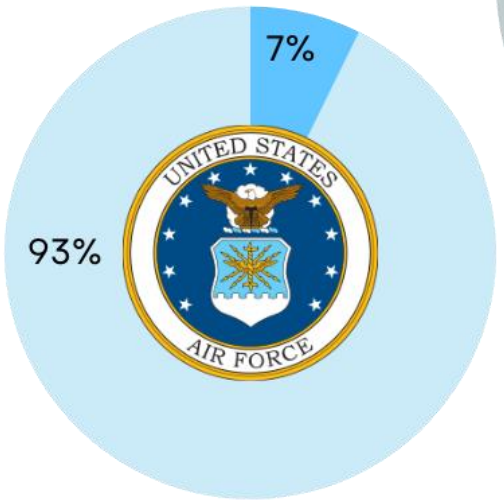


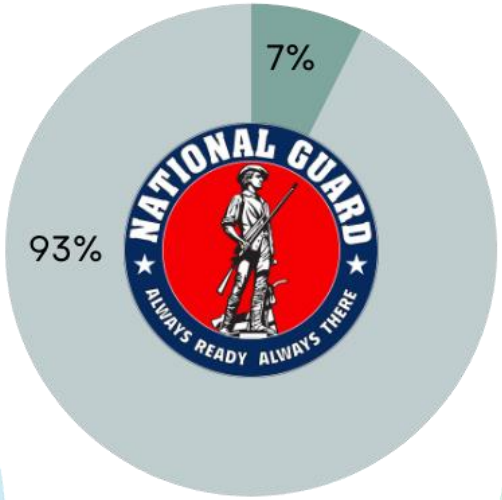
341 installations that require **Integrated Natural Resources Management Plans**

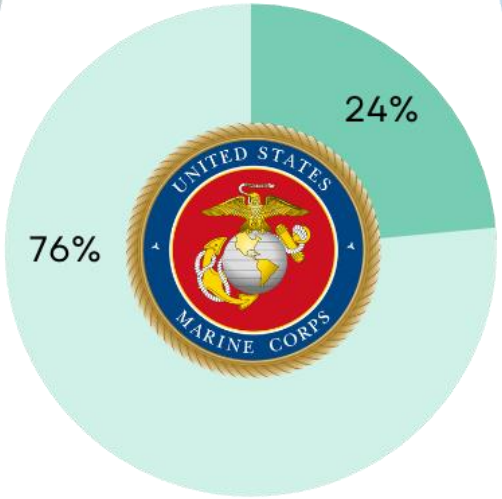
MILITARY SERVICE PROGRESS

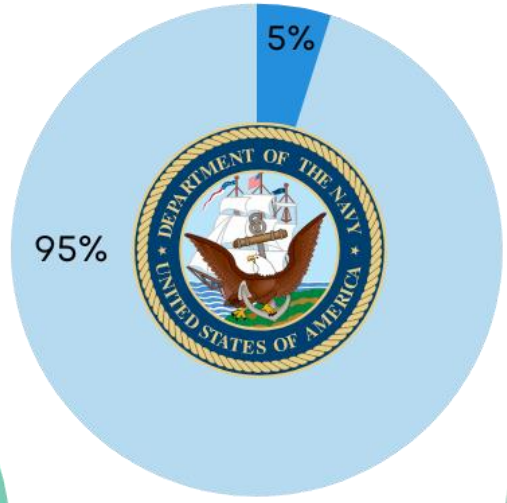
Installations with Contemporary Data by Service Branch

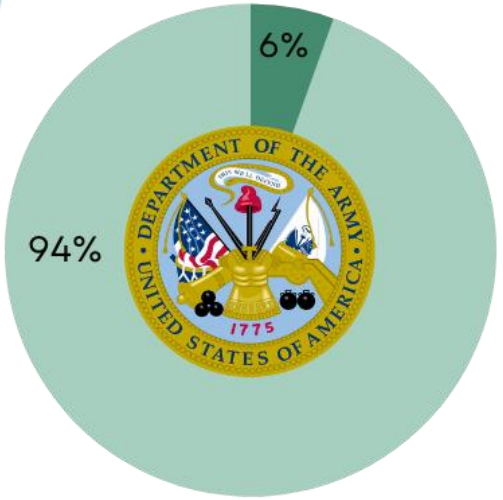
TODAY









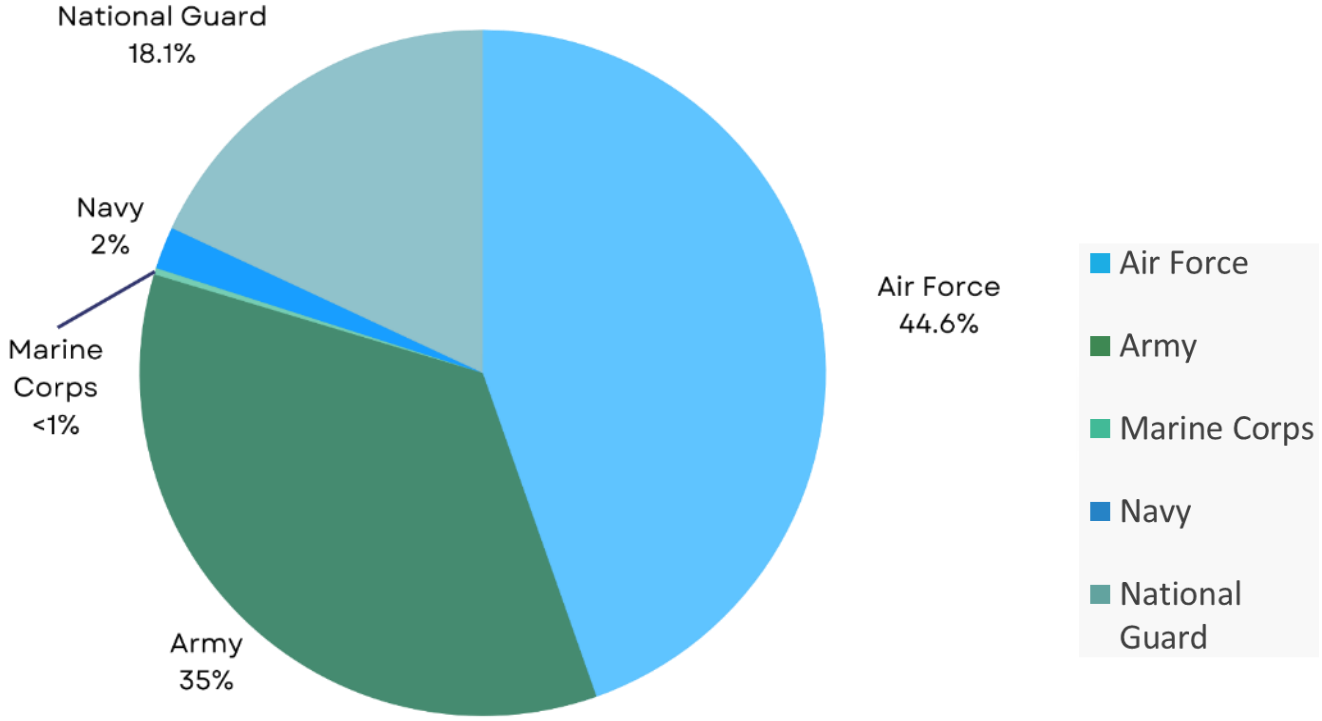


341 installations that require **Integrated Natural Resources Management Plans**

MILITARY SERVICE PROGRESS

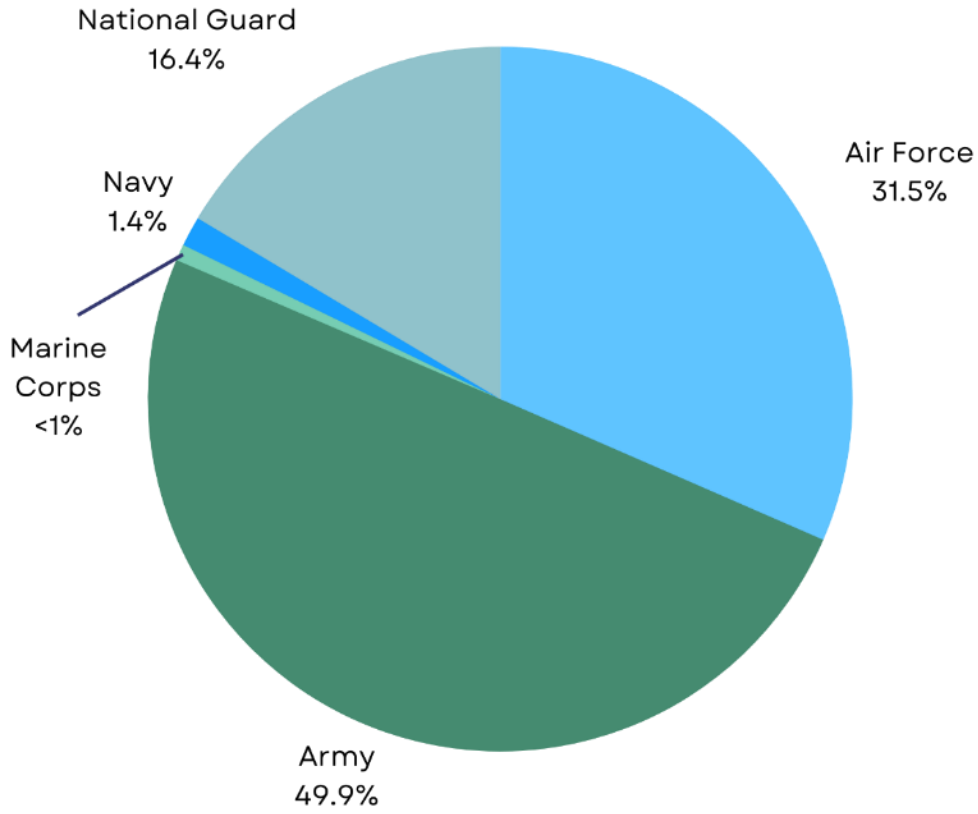
DoD Data Records in AKN by Military Service

March 2023



Total Number of Data Records: **221,482**

August 2023



Total Number of Data Records To-Date: **323,462**

DOD TOOLS

Data Discovery Survey & Training Questionnaire

DoD AKN Navy Survey

Welcome to the DoD Avian Knowledge Network (AKN) Navy Survey

The Department of the Navy seeks to continue facilitating a coordinated and comprehensive approach to implementation of the DoD's participation in the Avian Knowledge Network (AKN) that directly supports the DoD Bird Conservation Strategic Plan. Specifically, the Navy desires to improve the quality and effectiveness of bird conservation on their installations by using the data and tools within the AKN.

The Navy requests your participation in a short online survey to 1) gauge interest in virtual AKN training sessions and 2) determine what avian survey datasets exist that should be prioritized for upload into the AKN database.

Survey should take 5-10 mins to complete

1. Please give us the following information about yourself

Your name
Your Installation name
Your current position
Your work email address

2. Where have you heard about the Avian Knowledge Network (AKN) efforts across DoD and the Navy?

- [ ] DoD Partners In Flight (PIF)
- [ ] Legacy Program Fact Sheets
- [ ] NMFWA seminar or presentation
- [ ] Internal email
- [ ] From other DoD staff
- [ ] I haven't heard anything about AKN at DoD or Navy

6. We are planning to offer training classes to Navy staff on using the AKN web tools. Are you interested in any of the following training:

- [ ] How to load historical data into the system
- [ ] How to enter data interactively for future surveys
- [ ] How to see what data is available across the AKN
- [ ] How to use the AKN for data management, curation, and sharing
- [ ] How to use the AKN for rapid NEPA-type assessments at your installation using existing AKN data
- [ ] How to analyze trends of avian populations on your installation with your data

7. If you are interested in the virtual training in the next 12 months, select which times of year you would prefer to have a training.

- [ ] August/ September/ October 2022
- [ ] November / December 2022 / January 2023
- [ ] February/ March / April 2023
- [ ] May/ June / July 2023
- [ ] I'm not interested in or cannot attend a training in the next 12 months.

8. What region of the country would you prefer for an in-person training?

- ( ) Northeast
- ( ) Southeast
- ( ) Midwest
- ( ) Southwest
- ( ) West

10. In the future, select which avian surveys you plan to conduct at your installation.

- [ ] Point Count
- [ ] Area Search
- [ ] Transects
- [ ] Aerial Surveys
- [ ] Banding / Monitoring Avian Productivity and Survivorship (MAPS)
- [ ] Nest Surveys
- [ ] Colony Counts
- [ ] Breeding Bird Survey (BBS)
- [ ] Christmas Bird Count (CBC)
- [ ] Airfield / Bird Air Strike Hazard (BASH)
- [ ] Other (please specify)
- [ ] My installation has no plans to conduct avian surveys in the foreseeable future.

11. Do you use a field methodology where data are collected about a single individual multiple times within a count? (e.g. record an individual detected in minute 1 and minute 3.)

- ( ) Yes
- ( ) No

12. Do you use a field methodology that documents only a limited set of species, as opposed to all species present?

- ( ) Yes
- ( ) No

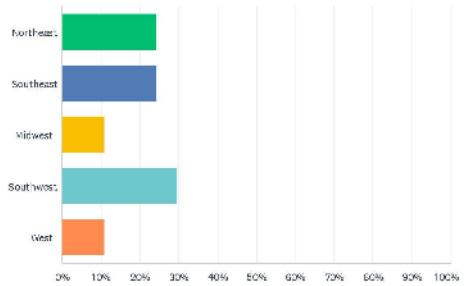
DOD TOOLS

Data Discovery Survey & Training Questionnaire

DoD AKN Navy Survey

Q8 What region of the country would you prefer for an in-person training?

Answered: 37 Skipped: 2

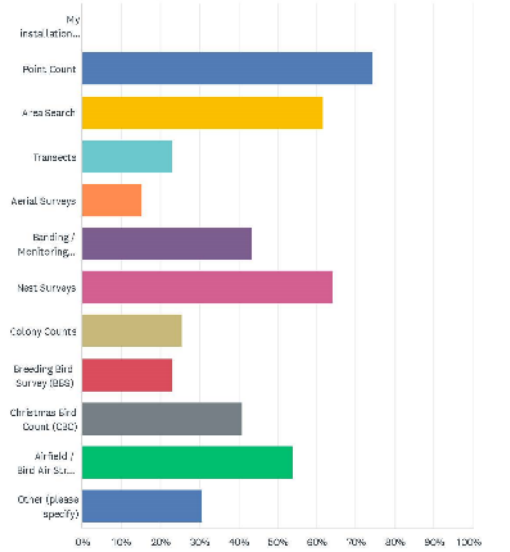


ANSWER CHOICES	RESPONSES	
Northeast	24.32%	9
Southeast	24.32%	9
Midwest	10.81%	4
Southwest	29.73%	11
West	10.81%	4
TOTAL		37

DoD AKN Navy Survey

Q9 Please select the avian survey type(s) your installation has conducted and has either current or historical data available.

Answered: 39 Skipped: 0

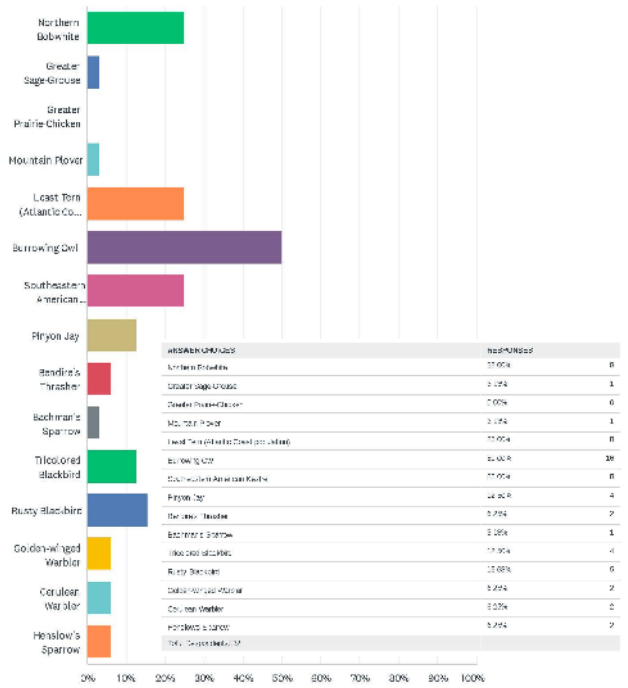


ANSWER CHOICES	RESPONSES	
My installation does not regularly conduct avian data surveys	0.00%	0
Point Count	74.36%	29
Area Search	61.54%	24
Transects	25.64%	10
Aerial Surveys	15.38%	6
Banding / Monitoring: Avian Productivity and Survivorship (MAPS)	46.15%	18
Nest Surveys	64.10%	25
Colony Counts	25.64%	10
Breeding Bird Survey (BBS)	23.08%	9
Christmas Bird Count (CBC)	41.03%	16
Airfield / Bird Air Strike Hazard (BASH)	53.85%	21
Other (please specify)	30.77%	12
Total Respondents: 39		

DoD AKN Navy Survey

Q15 Which DoD Mission Sensitive Species occur on your installation?

Answered: 32 Skipped: 7



DOD TOOLS

Standardized Sampling Methods

- Survey DoD personnel to identify the most common bird monitoring questions
- Promote standardized data collection methods across DoD
- Provide appropriate protocol selection based on management or research needs

SPECIES CHECKLIST

https://www.dodakn.org/resources/dod-akn-standard-sampling-methods/#SPCH

DOD MISSION-SENSITIVE SPECIES


Northern Bobwhite


Greater Sage-grouse


Mountain Plover


Greater Prairie Chicken


Burrowing Owl


Least Tern (Atlantic Coast)


Cerulean Warbler


Golden-winged Warbler


Pinyon Jay


Southeastern American Kestrel


Henslow's Sparrow


Rusty Blackbird


Bendire's Thrasher


Tricolored Blackbird


Bachman's Sparrow

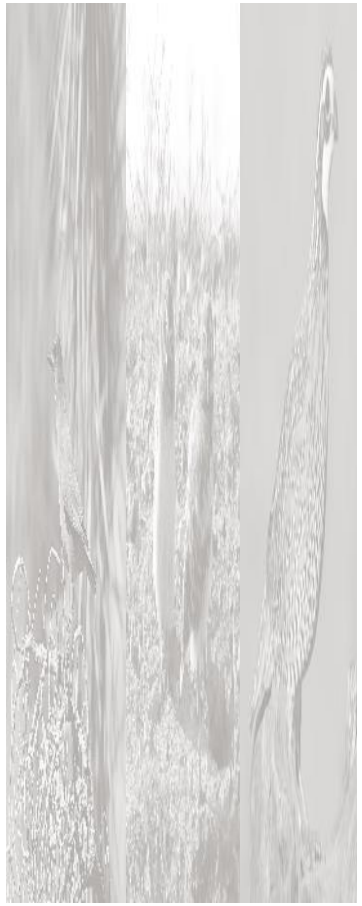
DOD MISSION-SENSITIVE SPECIES

Species	# of Installations
Greater Sage-Grouse	6
Greater Prairie-Chicken	3
Northern Bobwhite	70
Southeastern American Kestrel	14
~~Black Rail**~~	~~5~~
Mountain Plover	16
Burrowing Owl	50
Least Tern (Atlantic Coast Pop)	18
Pinyon Jay	7
Bendire's Thrasher	4
Golden-winged Warbler	24
Cerulean Warbler	30
Bachman's Sparrow	24
Henslow's Sparrow	25
Tricolored Blackbird	15
Rusty Blackbird	30

DOD AKN MSS 4-PRONGED APPROACH

- ✓FOCUS GROUP
- ✓AKN PROTOCOLS
- ✓DATA
- ✓MSS QUERY TOOL IN AKN

DOD MISSION-SENSITIVE SPECIES



DOD MISSION-SENSITIVE SPECIES

Pinyon Jay Survey Protocol for Landscape Applications (PIJA Working Group 2023)

DoD identified need for road-based point count protocol for rapid assessment at larger scales

Area Search survey based on 2.5km grids, available in AKN

Road-based point count protocol, available in AKN

Both field methods posted on DoD AKN Portal

https://www.dodakn.org/resources/mss/#MSS_PIJA

DOD MISSION-SENSITIVE SPECIES

Standardized Monitoring Strategies for Burrowing Owls on DoD Installations (Garcia et al 2008)

Guidelines and Recommendations for Burrowing Owl Surveys and Mitigation (California Burrowing Owl Consortium 1993)

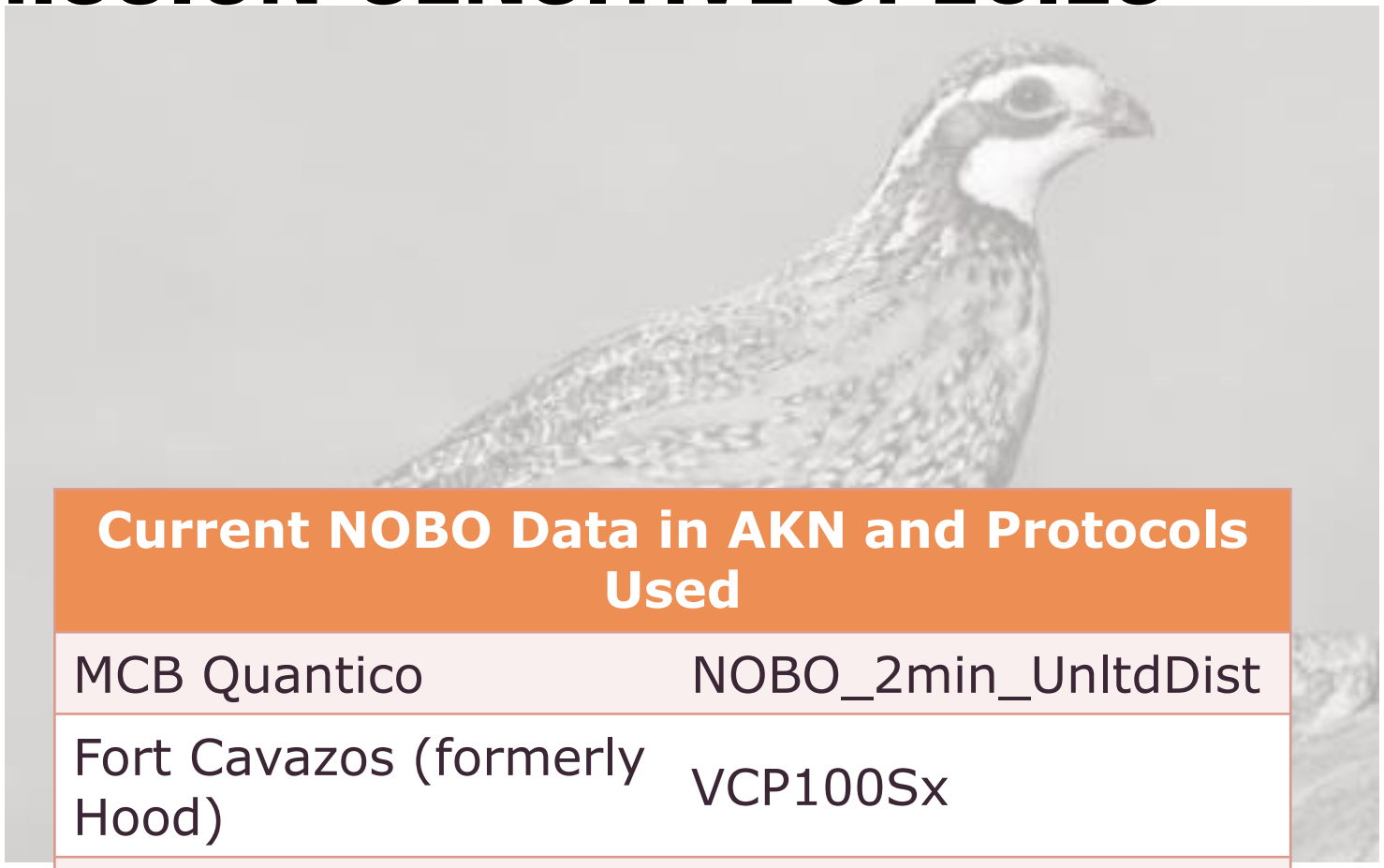
Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game 2012)

Comparison of Detection Probability Associated with Burrowing Owl Survey Methods (Conway and Simon, 2003)

Focus Group SMEs:

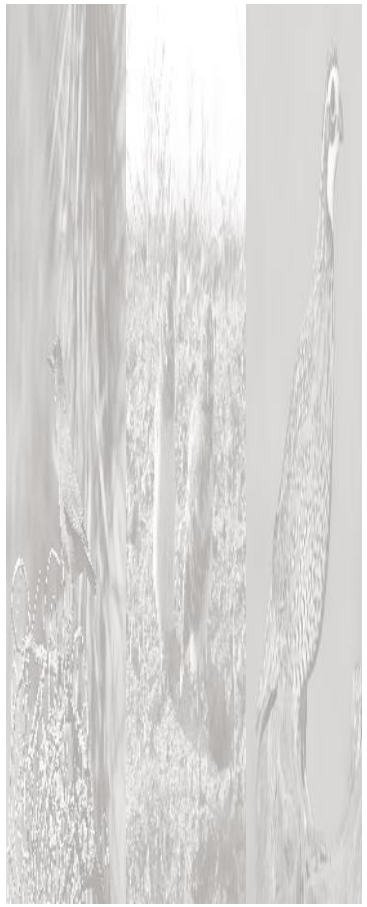
Courtney Conway, *USGS ID Cooperative Fish and Wildlife Research Unit*
Sandra Menzel, *Talon Ecological Research Group*
David H. Johnson, *Global Owl Project*
Kevin Warner, *Idaho Army National Guard*
Colin Leingang, *JBLM Yakima Training Center*
Russ Lawrence, *Hill AFB and Utah Test and Training Range*

DOD MISSION-SENSITIVE SPECIES



Current NOBO Data in AKN and Protocols Used	
MCB Quantico	NOBO_2min_UnltdDist
Fort Cavazos (formerly Hood)	VCP100Sx
Fort Riley	FortRiley_VR250m

DOD MISSION-SENSITIVE SPECIES

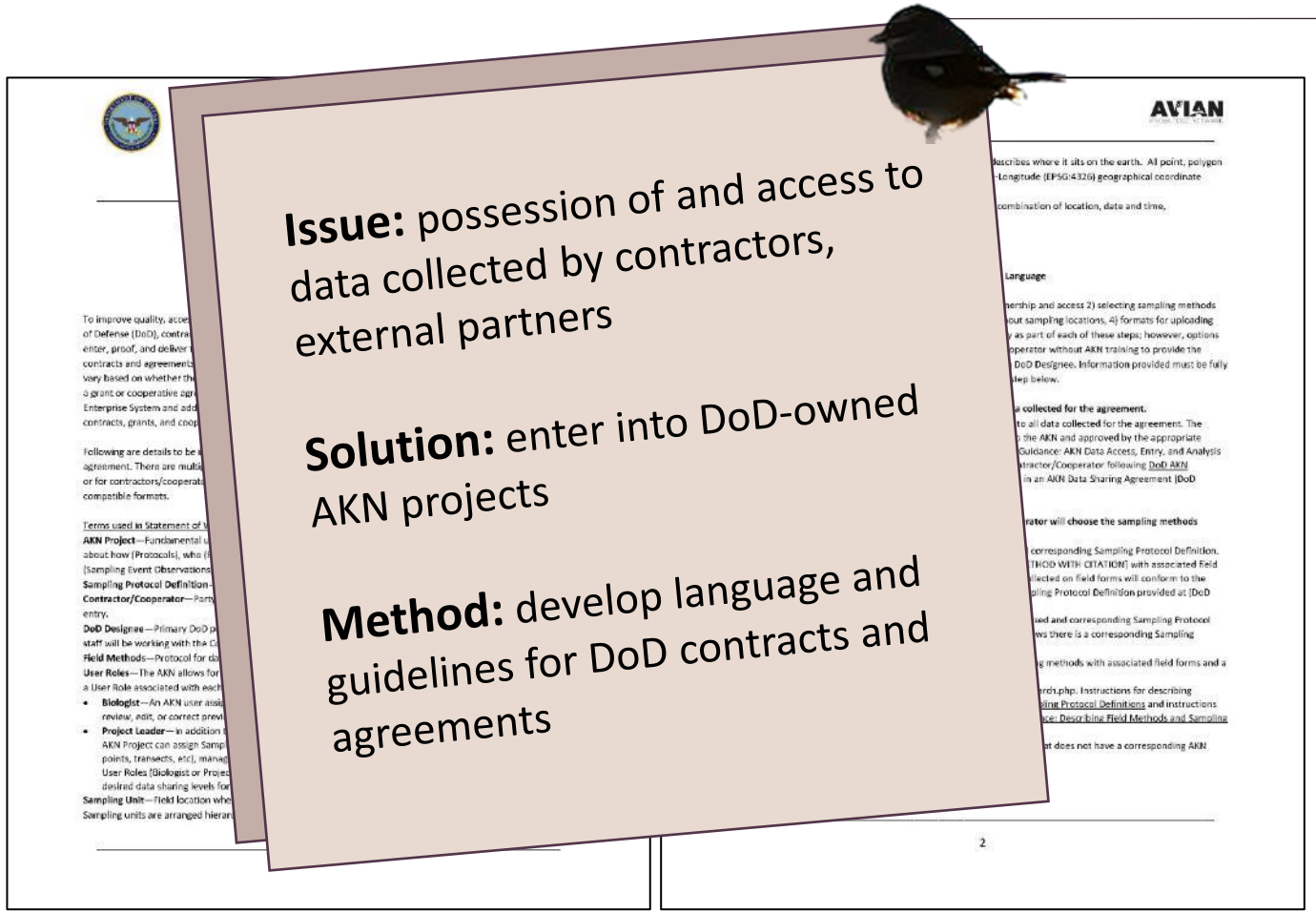


DoD DATA NEEDS

- BASH Data, specifically data collected by USDA-WS
- Banding data, including MAPS
- Nest data
- Sensor and machine-collected data
- Survey 123 cross-walk directly into AKN
- Foreign OCONUS data

SCOPE OF WORK LANGUAGE

for Contracts, Cooperative Agreements and Interagency Agreements



Issue: possession of and access to data collected by contractors, external partners

Solution: enter into DoD-owned AKN projects

Method: develop language and guidelines for DoD contracts and agreements

DoD AKN Guidance:

1. Avian Knowledge Network Data Sharing Guidelines
2. Describing Sampling Protocol Definition for AKN Compatible Projects
3. Sampling Protocol Definition Template
4. Describing Field Methods and Sampling Design
5. Creating AKN Compatible Sampling Units
6. Sampling Unit Bulk Upload Templates
7. AKN Data Access, Entry, and Analysis
8. Preparing Data to Submit for Bulk Uploading for AKN Compatible Projects

https://www.dodakn.org/resources/contract-language/

SCOPE OF WORK LANGUAGE

for Contracts, Cooperative Agreements and Interagency Agreements

AVIAN KNOWLEDGE NETWORK

Leveraging Partnerships, Data and Technology Information Revolutionize Avian Conservation and Management

Statement of Work Language for Department of Defense Service Contracts, Grants, and Cooperative Agreements

DRAFT – February 2023

Introduction

To improve quality, access, and usability of avian survey, monitoring, and research data collected for Department of Defense (DoD), contractors and cooperators collecting such data use the Avian Knowledge Network (AKN) to enter, proof, and deliver their data. Here we provide guidance for developing statement of work language for contracts and agreements to specify such use of the AKN by contractors and/or cooperators. Specifications may vary based on whether the DoD is acquiring data from a contractor via a service contract or from a cooperator via a grant or cooperative agreement. The DoD and AKN are also developing new capacities, including a Program Enterprise System and additional user access specifications that will influence how the DoD specifies AKN use in contracts, grants, and cooperative agreements.

Following are details to be included in the "Statement of Work" section of a service contract, grant, or cooperator agreement. There are multiple options for data access, project set-up, and data entry for users with AKN training or for contractors/cooperators who do not have AKN training but will need to submit their project data in AKN compatible formats.

Terms used in Statement of Work (SOW) language

AKN Project—Fundamental unit of organization for observation data within the AKN. Projects contain information about how (Protocols), who (Researchers and Users), where (Sampling Units), when (Sampling Events), and what (Sampling Event Observations) data are collected. For DoD, each installation has its own project.

Sampling Protocol Definition—Defines how the data were collected and how they are stored.

Contractor/Cooperator—Party within the agreement that is primarily responsible for data collection and data entry.

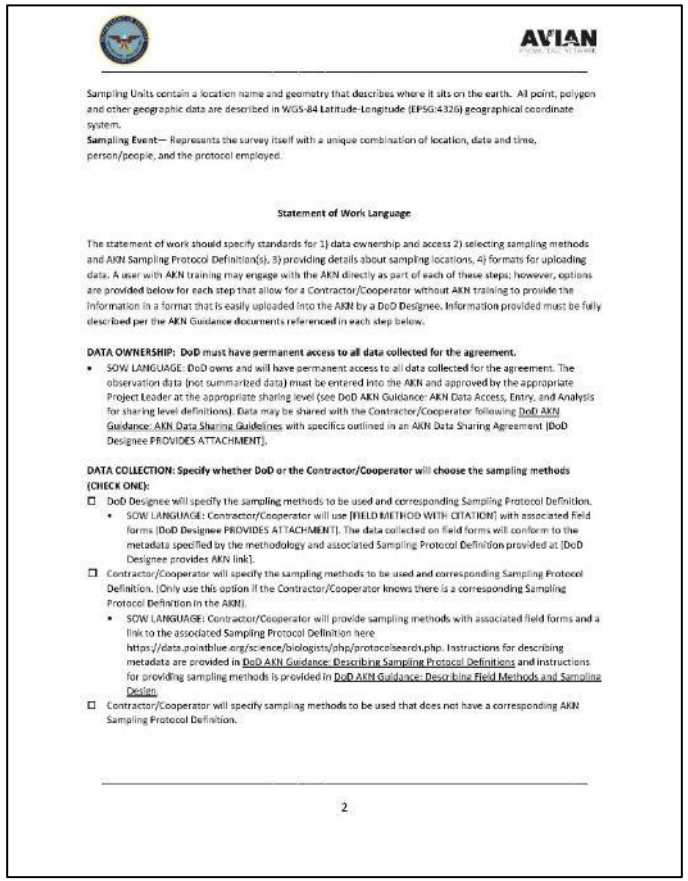
DoD Designee—Primary DoD point of contact for contract terms. Can also specify an DoD AKN staff member if AKN staff will be working with the Contractor/Cooperator.

Field Methods—Protocol for data collection in the field used by the Contractor/Cooperator.

User Roles—The AKN allows for multiple levels of access to enter, manage, and share data. AKN users are assigned a User Role associated with each AKN Project they have permission to access. Current User Roles include:

- **Biologist**—An AKN user assigned as a Biologist in an AKN Project can enter and proof data. Biologists can also review, edit, or correct previously entered data in any dataset housed within the AKN Project.
- **Project Leader**—In addition to all Biologist User Role capacities, AKN users assigned as a Project Leader in an AKN Project can assign Sampling Protocol Definitions to an AKN Project, manage the Sampling Units (areas, points, transects, etc), manage data, get full exports of the AKN Project data from the system, and manage the User Roles (Biologist or Project Leader) of other AKN users on the AKN Project. Project Leaders can also set the desired data sharing levels for data, which determines how the data will appear in the various tools in AKN.

Sampling Unit—Field location where research or a survey is conducted and samples (observations) are collected. Sampling units are arranged hierarchically within AKN Projects (e.g. point count points nested within a transect).



AVIAN

Sampling Units contain a location name and geometry that describes where it sits on the earth. All point, polygon and other geographic data are described in WGS-84 Latitude-Longitude (EPSG:4326) geographical coordinate system.

Sampling Event— Represents the survey itself with a unique combination of location, date and time, person/people, and the protocol employed.

Statement of Work Language

The statement of work should specify standards for 1) data ownership and access 2) selecting sampling methods and AKN Sampling Protocol Definition(s), 3) providing details about sampling locations, 4) formats for uploading data. A user with AKN training may engage with the AKN directly as part of each of these steps; however, options are provided below for each step that allow for a Contractor/Cooperator without AKN training to provide the information in a format that is easily uploaded into the AKN by a DoD Designee. Information provided must be fully described per the AKN Guidance documents referenced in each step below.

DATA OWNERSHIP: DoD must have permanent access to all data collected for the agreement.

- SOW LANGUAGE: DoD owns and will have permanent access to all data collected for the agreement. The observation data (not summarized data) must be entered into the AKN and approved by the appropriate Project Leader at the appropriate sharing level (see DoD AKN Guidance: AKN Data Access, Entry, and Analysis for sharing level definitions). Data may be shared with the Contractor/Cooperator following DoD AKN Guidance: AKN Data Sharing Guidelines with specifics outlined in an AKN Data Sharing Agreement [DoD Designee PROVIDES ATTACHMENT].

DATA COLLECTION: Specify whether DoD or the Contractor/Cooperator will choose the sampling methods (CHECK ONE):

☐ DoD Designee will specify the sampling methods to be used and corresponding Sampling Protocol Definition.
- SOW LANGUAGE: Contractor/Cooperator will use [FIELD METHOD WITH CITATION] with associated field forms [DoD Designee PROVIDES ATTACHMENT]. The data collected on field forms will conform to the metadata specified by the methodology and associated Sampling Protocol Definition provided at [DoD Designee provides AKN link].

☐ Contractor/Cooperator will specify the sampling methods to be used and corresponding Sampling Protocol Definition. [Only use this option if the Contractor/Cooperator knows there is a corresponding Sampling Protocol Definition in the AKN].
- SOW LANGUAGE: Contractor/Cooperator will provide sampling methods with associated field forms and a link to the associated Sampling Protocol Definition here https://data.pointblue.org/science/biologists/php/protocolsearch.php. Instructions for describing metadata are provided in DoD AKN Guidance: Describing Sampling Protocol Definitions and instructions for providing sampling methods is provided in DoD AKN Guidance: Describing Field Methods and Sampling Design.

☐ Contractor/Cooperator will specify sampling methods to be used that does not have a corresponding AKN Sampling Protocol Definition.

2

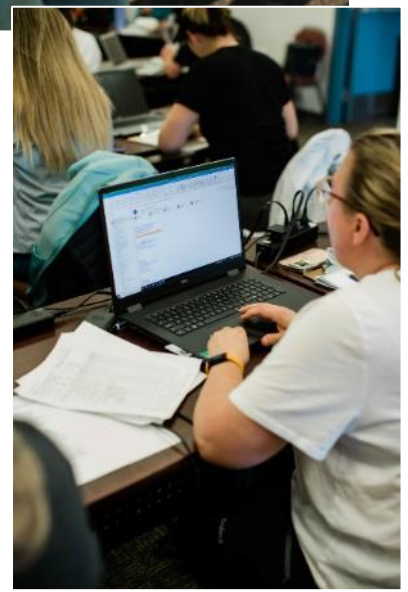
DoD AKN Guidance:

1. Avian Knowledge Network Data Sharing Guidelines
2. Describing Sampling Protocol Definition for AKN Compatible Projects
3. Sampling Protocol Definition Template
4. Describing Field Methods and Sampling Design
5. Creating AKN Compatible Sampling Units
6. Sampling Unit Bulk Upload Templates
7. AKN Data Access, Entry, and Analysis
8. Preparing Data to Submit for Bulk Uploading for AKN Compatible Projects

https://www.dodakn.org/resources/contract-language/

DOD AKN USER GUIDE

Detailed Step-by-step Instructions for DoD Use; Supplements Training



- Getting Started
- Managing Project
- Getting Data In
- Getting Data Out
- Exploring Data
- DoD Glossary

https://www.dodakn.org/resources/dod-akn-user-guide/

AKN TOOLS

Enterprise Support for Programs

Need: Data curation, management, and analysis at multiple scales (installation, Military Service, and DoD-wide)

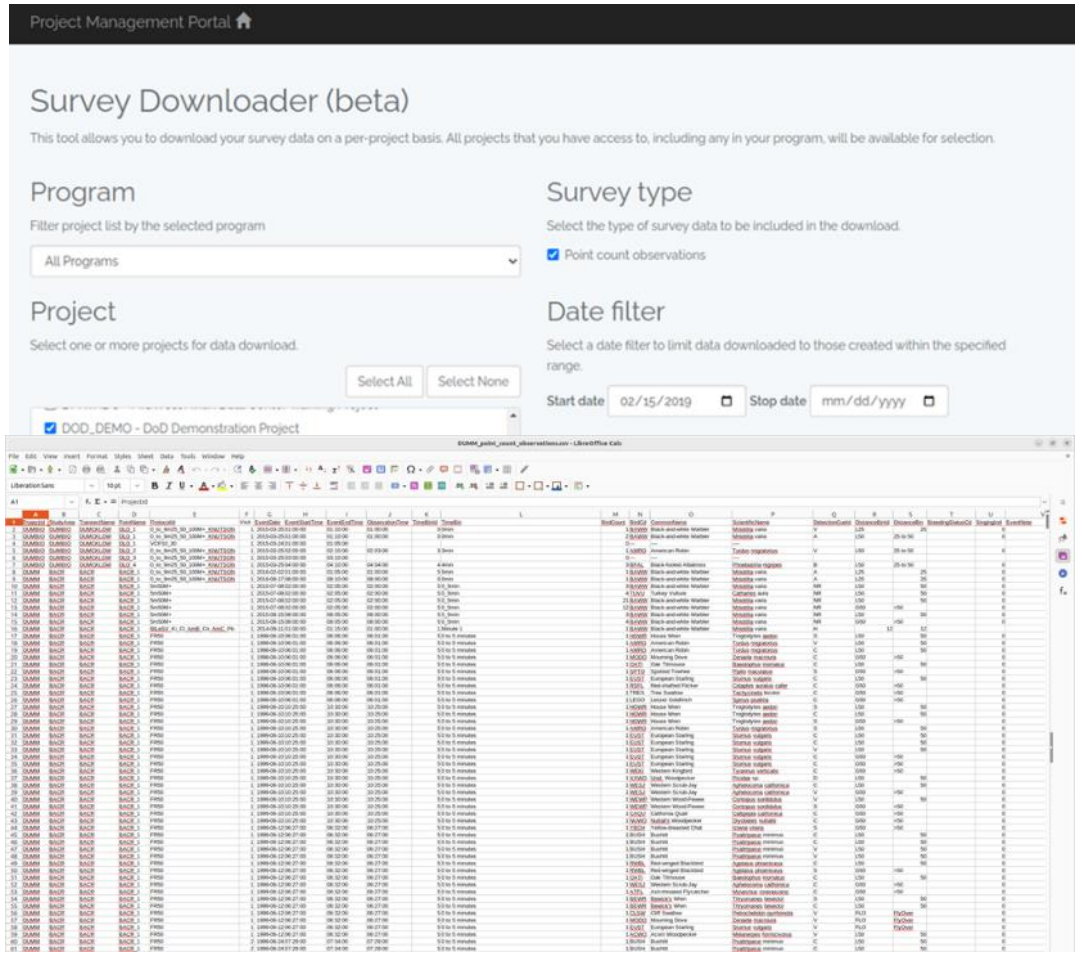
Solution: AKN-wide structure allowing multiple Project grouping via Programs.

Plan: Build new technology, to create/manage Programs, especially for query and download of project data

Status: In prototype phase

I. Beta test of Program download tool

II. Prototype of Program warehouse



AKN TOOLS

New System User Roles

Need: Roles in the system that meet requirements for data entry and/or analysis for portions of AKN projects

Solution: Creation of two new user roles that meet identified needs

Plan: Create two new roles

I. **Contractor Role** - support a contractor requiring access (data entry, data download, data analysis) to a portion of Project

II. **Analyst Role** - allow full access to a Project or Program for data download and analysis, w/o ability to manage metadata or user access.

Status: Needs and roles identified, Will begin upon completion of the Enterprise Support for Programs

FY24 PRIORITY TASKS

Base Support
Program Coordination
Installation Consulting (Office Hours)
Back-end Technical Support
Customer Data Support
Reporting: Annual, Qtrly & Factsheets
Annual Support Costs (Science Cloud)

Training
Regional Training (4x/year)
Service-specific Trainings
Manager Training Modules
Expanded Methodology Training
Training Videos

AKN Tools (Partner Initiatives)
Enterprise Support for Programs
Creation of Contractor Role
Creation of Analyst Role
New Analyst v3 in Shiny

Data Initiatives
MSS Protocols & Data
Banding Data in Science Cloud
BASH Data in Science Cloud
Machine/sensor-collected Data
Decision-support Tools & Publications

DoD-Specific Tools
DoD User Guide
Progress Dashboard
Standardizing DoD Bird Monitoring
Mission-sensitive Species Tools
Climate Resilience Tool

Military Services & Installation Support
Historical/Contemporary Data Support
Custom Data Outputs
Direct Data Initiatives
Case Study Development

DOD MISSION BENEFITS

- Secure database to input/upload, curate, and manage DoD field data
- Empowers historical data
- Assess status of birds on/near installations
- Monitor trends at multiple scales
- Data sharing and integration with partners
- Advanced data analysis and visualization tools

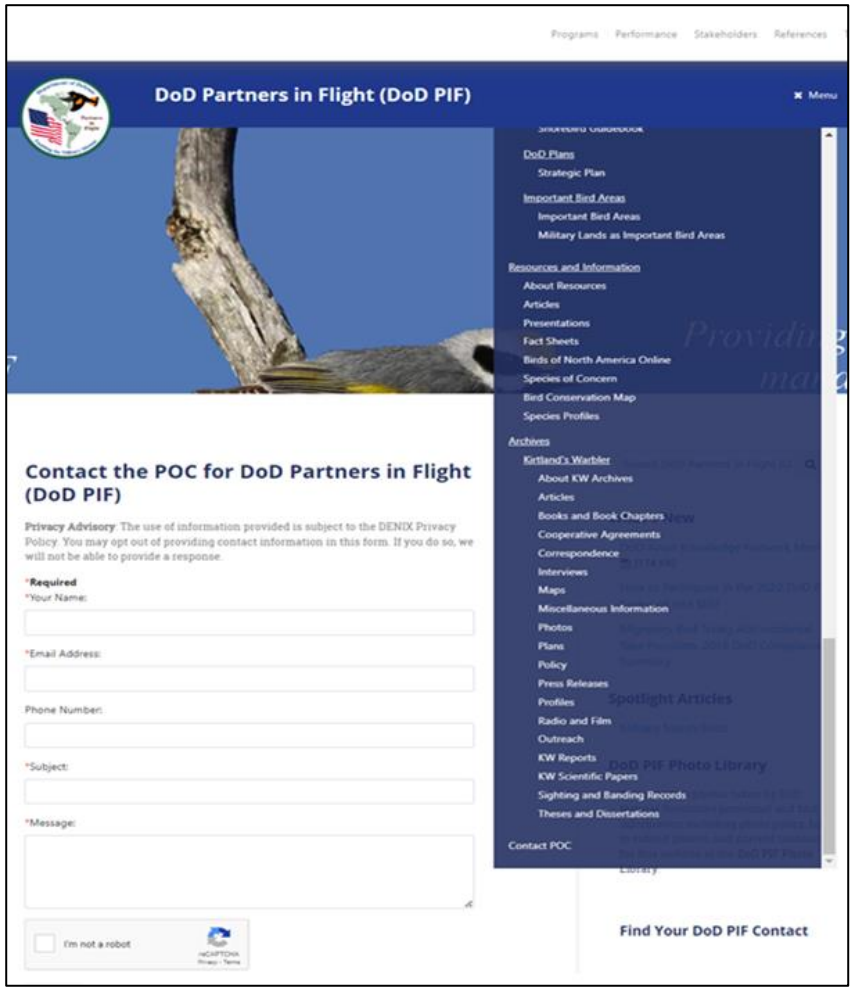
- Access to data that contributes to more technically and scientifically sound INRMPs, NEPA environmental reviews, and ESA Section 7 Consultation
- Contributes directly to proactive conservation, monitoring and management of priority bird species

Enabling the Mission, Defending the Resources

NEXT STEPS FOR YOU

SIGN-UP FOR DoD AKN UPDATES

1. Enter name
2. Enter email address
3. Enter "add to listserv"
4. Say please in message
5. Confirm you're not a robot



ONGOING SUPPORT

- ***Monthly Virtual Office Hours***
  - Monthly "Office Hours"
  - Calendar and signups **here**

- ***Other Opportunities***
  - Training videos on AKN YouTube Channel (https://www.youtube.com/channel/UCi9in_tC9uTZa9Bo3HgnY1Q/featured)
  - Funded data initiatives from Military Services

Questions, thoughts, suggestions in the future?
Contact our team!

DoDAKN@erdc.dren.mil

END-TO-END PROCESS TO REGISTER A NEW USER

DEMONSTRATION

WHAT UPDATES, INITIATIVES, TOOLS DO YOU WANT TO SEE?

OPEN FORUM

PLUSES AND DELTAS

FINAL DAY WRAP-UP

DoD and the AKN: Who, What, Where, When , Why, and How

DoD Regional Training
August 29-31, 2023
Naval Base Kitsap-Bangor, WA

Sam Veloz
Dianne Miller

Elizabeth Neipert
Zoe Duran

John Alexander
Caitlyn Gillespie

Point Blue Conservation Science

ERDC ENGINEER RESEARCH & DEVELOPMENT CENTER

Klamath Bird Observatory

AVIAN KNOWLEDGE NETWORK

Reach out!
DoDAKN@erdc.dren.mil

NAVAL BASE KITSAP

Thank you for participating and thank you to our hosts!

Photo: Heather Roskelley/Audubon Photography Awards