

State of Connecticut  
Department of Energy and Environmental Protection

# Electronic Natural Diversity Data Base (eNDDB)



*“Protecting CT’s Native Biological Diversity with Improved  
Automation and Efficiency”*

*Category: Business Process Innovation*

*Contact: Michael Trahiotis, Project Manager*

*Project Dates: 6/2020-11/2021*

## Executive Summary

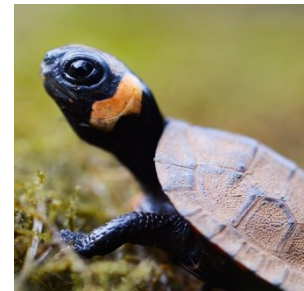
---



The Connecticut Department of Energy and Environmental Protection (DEEP) is charged with conserving, improving, and protecting the natural resources and the environment of the state of Connecticut as well as making cheaper, cleaner, and more reliable energy available for the people and businesses of the state. The agency is also committed to playing a positive role in rebuilding Connecticut's economy and creating jobs and to fostering a sustainable and prosperous economic future for the state.

DEEP's Natural Diversity Data Base (NDDB) is a program for the protection of Connecticut's native biological diversity, with emphasis on our most vulnerable species and ecosystems. The NDDB maintains data collected over the years by the Connecticut Natural History Survey, cooperating units of DEEP, landowners, conservation groups, and the scientific community. Species abundance, viability, threat, and trend data are used to rank and determine which species qualify for protection under the State Endangered Species Act. The electronic NDDB Solution (eNDDB) was to initiated streamline and add automation to the NDDB application process as well as the internal review and disposition process to reduce the administrative burden on the regulated community as well as NDDB Program staff.

The NDDB Program is central to DEEP's ability to deliver on its mission. DEEP's NDDB program reviews hundreds of projects each year to determine their impact on state-listed species. The NDDB Request for Review process was developed by DEEP to assist state agencies with the requirement that any activity authorized, funded, or performed by the state does not threaten the existence of endangered or threatened species. Applicants for state and local building permits and grants may be required to consult with the NDDB as part of the application process. Species and habitat surveys may be required to assess risks and to determine appropriate mitigation measures.



The eNDDB System delivers value to Connecticut's regulated community by:

- ❖ **Delivering IT tools to benefit CT regulated community** - intuitive design drives ease of use, less time and resources required, transparent process immediately provides project specific information to applicants, eligible applications receive immediate, automated NDDB Determinations, in-line help to guide on-line process, 24/7 system availability
- ❖ **Delivering IT tools to benefit DEEP NDDB staff** - data-driven application puts NDDB staff in control, reduces administrative burden to manage program, allows focus of limited resources on most complex projects requiring specialized reviews and consideration, on-line validation tools ensure all applications received are standardized and complete, automated approvals remove requirement of DEEP staff review for routine reviews and allows more time and resources to

devote to complex reviews, flexible, internal workflow system to support manual reviews, data-driven correspondences with ability to customize information provided to applicant

- ❖ **Delivering tools that align with State's Enterprise IT Plan** - integration of NDDB application within DEEP's ezFile Portal

## The Idea

---



Prior to eNDDB, all applications required manual review and disposition by DEEP staff. Many regulated activities at locations requiring a NDDB Determination require communication of standard comments and suggestions. The eNDDB project alleviated the administrative burden to manually review each application by creating a pathway for automated NDDB approvals. Applicants specify the type of project and via GIS tools the geographic extent of the project's footprint.

The eNDDB then determines if the project intersects with endangered species. If all species intersected are eligible for automation, then applicants are provided a data driven NDDB approval letters which contain project type-species specific comments and recommendations.

Providing automated NDDB approvals not only benefits the applicant receiving the automated approval. Reducing the quantity of NDDB applications that require manual review and disposition by DEEP staff allows for efficient use of limited resources and supports reduced timelines for manual reviews. To deliver efficiencies and automation to DEEP staff, an internal workflow solution was developed to support manual review of applications. The workflow developed supports all phases of DEEP's internal application review process and delivers a streamlined workflow solution.

The NDDB program analyzed each step of the business process to eliminate steps that consume resources without delivering value. DEEP IT analyzed previous applications implemented to improve user experience.

- **Simplified single webpage design** – Previous portal-based applications were based upon a design requiring applicant to navigate from one page to another to complete an application. User feedback indicated that users had difficulty determining what steps to complete and when to navigate to the next webpage. The eNDDB system implemented a single page design with multiple sections stacked on top of one another in an accordion style.

- Requester Information ✓
- Preliminary Screening ✓
- Project Information ✗

Any changes made to this section may impact your determination status result.

Please enter a project name to be used in correspondences:

What is the project category?

Construction, Development

What is the project type?

Building and Infrastructure Development (including stormwater...)

What is the project sub-type?

Addition to an existing facility

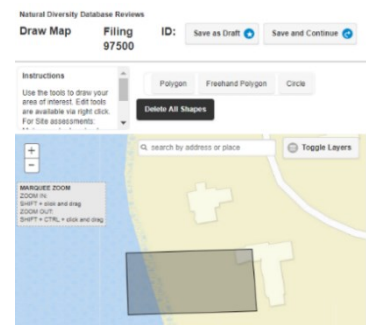
Intuitive section banners to guide applicants through the portal application.

(1) **Green** banners indicate a section is complete.

(2) **Grey** banners indicate a section is incomplete.

(3) **Red** banners indicate a section must be completed to proceed further.

- **Integration with DEEP's ezFile Portal** – DEEP's constituents have a single point of contact to manage their license applications.
- **Real-time application processing to determine review type** – With a single click of the 'Save and Continue' button applicants process their project type and location and the eNDDDB system checks for endangered species intersections and determines whether the applicant is eligible for an auto-approved NDDDB determination or whether a biologist review is required to ascertain the proper outcome.
- **Internal workflow solution** – Intuitive, flexible workflow design provides DEEP staff eight controls to customize the workflow required to review each application. No



outside intervention required to tweak or change a workflow. All controls are provided to NDDDB staff to navigate the internal workflow system from application receipt to final disposition (Deny, Withdrawn Approve).

Add Comment to Case   Add CB Task

Deny	Withdrawn
Administratively Closed	Sufficiency -RAI
Technical -RAI	Incidental Take -RAI
Approve	Approve -ARR

Application queues provide immediate application review status feedback to NDDDB staff. Technical Review indicates NDDDB staff are in the process of performing a review. Pending Sufficiency -RAI (request additional information) indicates DEEP staff requested the applicant to submit additional information to proceed with application review.

Step Name	App#	Por...	Received On	Time Quised	Taxa	Project Type Short	Client	Towns (S...
Technical Review	2322056	60820	3/7/2023, 10:04 AM	3/7/2023, 10:05 AM	R	Forest Management Plan, Land Management and Vegetation Control, Natural Resource/Site Management	Ace NDDDB Specialists	Hartford
Pending Sufficiency -RAI	2322001	60757	2/17/2023, 8:43 AM	2/29/2023, 9:43 AM	R	Forest Management Plan, Land Management and Vegetation Control, Natural Resource/Site Management	Ace NDDDB Specialists	Durham
Technical Review	2322195	60592	1/26/2023, 2:53 PM	3/7/2023, 2:54 PM	R, F	Addition to an existing facility, Building and Infrastructure Development (including stormwater discharge associate with construction), Construction, Development	Ace NDDDB Specialists	Branford
Technical Review - Incidental Take	2322164	60301	11/8/2022, 8:47 AM	11/29/2022, 2:52 PM	B	Modification/Repairs to existing structures-Airport Work, Airport Work, Construction,	Ace NDDDB Specialists	Hartford

## Implementation

eNDDB is part of the larger State initiative to digitize services provided by all state agencies, moving customers from “in line” to “online”. Guided by the State’s IT Strategic Plan for FY23, the project reflects enterprise goals such as IT optimization, accelerating digital government services and improving cybersecurity statewide. To date, after the implementation of eNDDB, DEEP has moved 28 license applications process supported by nine programs online at the ezFile Portal.

External Customers	DEEP NDDB Staff	DEEP IT Staff
<ul style="list-style-type: none"> <li>• CT Businesses</li> <li>• CT Landowners</li> <li>• CT State Agencies</li> <li>• Consulting Firms</li> </ul>	<ul style="list-style-type: none"> <li>• Administers NDDB Program</li> <li>• Wildlife Biologists trained to assess environmental impacts</li> <li>• Maintain, update and improve geographic data (GIS) related to endangered species</li> </ul>	<ul style="list-style-type: none"> <li>• Technical Solution Lead and Architect</li> <li>• Two developers assigned to project</li> <li>• Project Manager to lead Business Team and facilitate communication throughout project</li> <li>• GIS environment creation and maintenance</li> </ul>

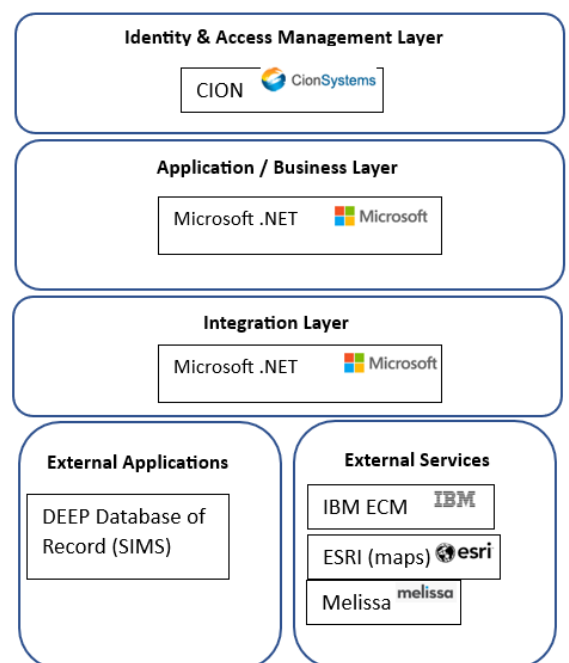
eNDDB was conceived, specified, architected, designed, constructed, tested, and implemented in a collaborative effort between DEEP IT and NDDB program staff. The project began with a thorough and exhaustive analysis of the NDDB program’s business process. Modern IT tools were deployed to drive increased efficiency and decrease the administrative burden on both the regulated community and NDDB program staff. The project management methodology was a blend of Waterfall and Agile. The project team endeavored to produce a minimal level of project documentation to support the project while maximizing the time and effort put into design, build and testing. From project initiation to implementation and publication it was a “one team” effort which included stakeholders from multiple groups.

### Architecture

Reusability and extensibility are central to DEEP’s ezFile Portal. NDDB being the 7th program to move their application process online at ezFile Portal demonstrates reuse and extensibility. The Portal leverages Microsoft .NET as a platform to deliver application and integration services. Via these services integrations with IBM Enterprise Content Management, ESRI maps, Melissa address verification and DEEP’s Database of Record (SIMS) centralizes the ezFile Portal as the hub for DEEP’s online application services.

### Impact

As a pre-requisite to a large percentage of DEEP licenses, the NDDB Program is central to the Agency delivering on its mission to conserve, improve, and protect Connecticut’s natural resources. As such, DEEP customers routinely look to “fast-



track” their NDDB reviews by contacting the Commissioner’s office to advocate for their application to be immediately reviewed. Prior to NDDB all applications required manual review by biologist and therefore to “fast-track” the review of an application, then the application currently under review had to be set aside. Providing automated approval for eligible applications provides customers with the ultimate “fast-track” service. Moreover, each automatically approved application frees up DEEP staff to focus their reviews of more complex projects with a higher degree of potential environmental impact.

In the first 5 months of publication, DEEP has received the following feedback from external customers:

- *“WOW, I did not think this was going to be so simple”, “...it was totally simple”*
- *“It was easy to use, I have all the ones I need DONE for 2023! It is amazing!”*
- *Wow, I hit submit and as soon as it finished processing the decision letter hit my email. This system will weed out all these simple approvals from your inbox!”*
- *“Thanks so much for the quick turnaround! The new system seems pretty smooth.”*
- *“...that was fast! It took me a couple attempts before I was able to submit, but overall it was a smooth process and I can see this saving time in your review and providing an improved service to the public/applicants.”*

## Initiatives and Metrics

---

The NDDB Project was included in Commissioner Dykes 20 by 20 Initiative which endeavored to make 20 measurable environmental permitting and regulatory process improvements completed by December 31, 2020. The process begins with an evaluation of whether a project may impact listed species and thus requires an NDDB evaluation to provide appropriate requirements for conserving those species. This initial screen sometimes takes several weeks to complete, as program staff are managing hundreds of reviews at various stages of completion.

The 20 by 20 goal was to provide 60% of NDDB applicants with an immediate answer with respect to the NDDB review required for their application. The eNDDB system was published in November 2022. In the five-month period since publication, 100% of NDDB applications were processed via the eNDDB system. Therefore, 100% of NDDB applicants were provided with an immediate answer with respect to the NDDB review required. **The 20 by 20 goal was met and exceeded.**

Driving further into the data, thus far the eNDDB system has processed 447 NDDB applications. Out of that total, 191 applications received automatic approval by the eNDDB system.

- ✓ 42% of applications automatically approved
- ✓ 191 manual NDDB reviews did not have to be performed
- ✓ 191 customers received immediate NDDB approval

The auto approval rate thus far is 42% which also corresponds to 191 manual NDDB reviews that staff did not have to perform. And, importantly, the applicants did not have to wait up to 2 months for their NDDB determination. In the same 5-month period from November 2021 to April 2022 (pre-eNDDB), the NDDB

program manually reviewed 411 NDDB applications. Assuming 42% of the applications would have been eligible for automatic approval by the eNDDB system results in an estimated 173 applications that were manually reviewed when an automated approval with standard comments and suggestions sufficed.

### **Future Planning**

After 5 months of usage, eNDDB has experienced zero days of down-time and no gaps in functionality have surfaced that would necessitate an enhancement. At the 1 year in service mark, the NDDB program will assess all the applications received. The objective of the assessment will be to answer 2 questions:

1. Are there projects that received automated approvals that merited an in-depth manual review with customized responses?
2. Are there projects that received a manual review that could have been handled via the automated approval process?

With the updating of a single field in the matrix database, a project type / species intersection can be flipped from a manual biologist review to an automated approval process. The update process is simple, direct, and efficient. Upon refresh of the data in the database via overnight services the eNDDB application submitted the next day by applicants will reflect the update data in the database.

Additionally, the NDDB continuously improves the endangered species data underpinning eNDDB. In the first 5 months since initial publication, two updates to the endangered species data have already been published. This ability provides immediate insertion of the new endangered species data to eNDDB.

### **Conclusion**

---

The NDDB program and DEEP IT staff are very excited about the addition of eNDDB to DEEP's pool of online services. In the first 5 months of publication, hundreds of DEEP NDDB external customers have positively benefited from the online application process all the while the solution has experience zero hours of downtime. The solution's internal customers, NDDB staff, are benefiting from an intuitive, flexible workflow that focuses their NDDB reviews within a single user interface. Customer feedback is overwhelmingly positive with IT buzz words like "simple" and "saving time" being used to describe the experience of utilizing eNDDB. Whether it be a more efficient, less time-consuming electronic application submittal, or be it being eligible for an automated approval letter, DEEP's NDDB customers have let us know that eNDDB is serving their needs and has moved them from inline to online.