Interim Report
State Wildlife Grants
T-9-R-2

New Jersey's Landscape Project

Interim Report for Project Year
September 1, 2011 – August 31, 2012

NJ Department of Environmental Protection

DIVISION OF FISH AND WILDLIFE
ENDANGERED AND NONGAME SPECIES PROGRAM
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NEW JERSEY DIVISION OF
Fish and Wildlife

Conserve Wildlife
New Jersey Division of Fish & Wildlife
Endangered & Nongame Species Program

EXECUTIVE SUMMARY

Project: **New Jersey's Landscape Project**
Federal Aid Project: T-9-R-1 (State Wildlife Grants)
Segment dates: September 1, 2011 to August 31, 2012

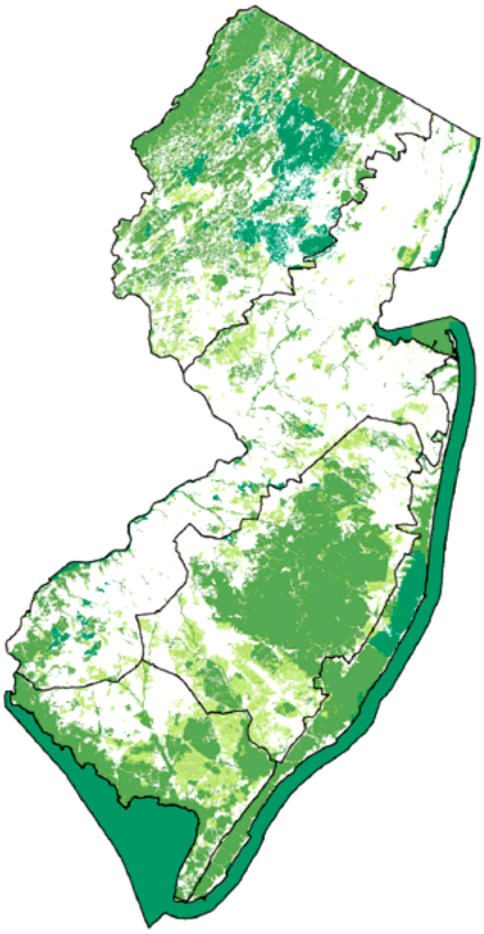
JOB 1: Wildlife Habitat Mapping

Project Leader: Peter Winkler

OBJECTIVE: Design, refine and make available wildlife habitat designations using the most current data on rare species populations and land cover types.

Key Findings:

- Version 3.1 was completed and released to the public in February of 2012. The release of the updated mapping was coordinated with revisions to the state list of threatened and endangered species. Finalized mapping for each of the six Landscape regions was completed for all listed species. This mapping incorporates the previous eight GIS layers per Landscape region into one GIS layer per Landscape region. This will likely eliminate some user error.



Landscape Region	Hectares
Atlantic Coastal	98,959
Delaware Bay	149,349
Piedmont Plains	135,831
Pinelands	298,338
Skylands	328,452
Marine	203,807
Total Ranks 3,4,5	**1,214,736**

- All Landscape Project GIS data continue to be made available in both Shapefile and file geodatabase format and fully documented with Federal Geographic Data Committee (FGDC) compliant metadata. The data is served on the NJDEP Bureau of GIS website for download (http://www.nj.gov/dep/gis/landscape.html) as well as on the NJDEP interactive mapping application (NJ-GeoWeb).
- ENSP updated the Landscape Project website to reflect the changes to the updated version. http://www.state.nj.us/dep/fgw/ensp/landscape/index.htm
    - Landscape Project Version 3.1 has been fully documented in a 1,490 page report available for download on the Landscape Project website
    - The report is organized as follows
        - New Jersey's Landscape Project (Version 3.1)
        - Appendix I – Protocol for Accepting or Rejecting Species Sighting Reports
        - Appendix II - Species Occurrence Area Justifications
        - Appendix III - NJDEP 2007 Land Use/Land Cover Categories
        - Appendix IV - Land Use/Land Cover Analysis for Species and their Feature Label Components
        - Appendix V - Land Use/Land Cover Selections and Patch Type Justifications

- ENSP incorporated approximately 3,500 new or updated Species Occurrence Areas (SOA) for use in Landscape mapping since the last version of Landscape was released.
- Utilizing Citrix, Version 3 methodologies were developed and documented in a Microsoft Access database for all listed species. This enabled staff to enter and access their species attributes in one centralized database without having to travel to the Trenton office.
- ENSP biologist staff upgraded to ESRI's ArcGIS 10.x from older versions of GIS software. This upgrade facilitated collaboration on the creation of GIS data for the development of Version 3.1 Landscape Project.
- All listed mussel occurrences were mapped in a new statewide streams layer.
- ENSP staff met with the Division of Land Use Regulation (DLUR) and performed a review of new mapping methodologies for some of the most controversial species for certain land use regulations. We worked with DLUR to collaboratively produce a mapping product for those species so we were all satisfied with the end result.
- No peer review committee meetings were conducted. However, we sought new peer review committee members, and a few potential GIS-specific experts were identified for future participation.

Conclusions:

- In January, 2012, ENSP published the new statewide mapping using Version 3 methodology, concurrent with revised lists of endangered and nongame wildlife. This was a major accomplishment and provided agencies, citizens and conservation groups with the best information on habitats used by species of greatest conservation need in NJ. Release of the new map products was accompanied by thorough documentation of the data and methodologies employed to create them.
- Creating a statewide version of the Landscape Project that incorporates Version 3 methodologies was a more time consuming than anticipated. If more detailed and species-specific mapping is going to be developed then more staff time and resources must be devoted to Landscape Project mapping.

Recommendations:

- Now that Version 3.1 method has been solidified, attempt to update Landscape Project on a regular basis.
- Continue the peer review process on new methodologies as they are developed.
- Develop a plan for releasing the Landscape Project products and, to the extent possible, minimize delays in product updates.
- Work with the Department's Bureau of GIS to ensure the Department continues to support the creation of the Land Use Land Cover data which is the base for Landscape Project mapping.

JOB 2: Biotics Database

OBJECTIVE: Update and maintain the most current data on rare species populations in New Jersey.

Key Findings:

- ENSP contracts with the Conserve Wildlife Foundation of NJ (CWF) for assistance with entering and maintaining records in the Biotics database. All activities described below have been completed with staff assistance from the ENSP and the CWF.
- Biotics staff received approximately 2,022 additional rare animal records during the 2011-12 segment, 904 from the public and 1,118 from ENSP staff. Approximately 2,734 rare animal records were entered into Biotics and of those approximately 688 were updates to previously mapped records. There remains a backlog of approximately 889 endangered and threatened species records that have been reviewed and accepted by biologists and are awaiting entry into Biotics.
- Staff released Version 7 and 8 of the Species Occurrence Area (SOA), Sensitive Area, and Source Features files in February and August 2012, respectively. SOA_7 was created in May 2011 for the development of V. 3.1 of the Landscape Project mapping but was not released until February 2012 to coincide with the release of the Landscape Project mapping and the official adoption of species status changes reflected in the SOA files. There were approximately 1,395 and 995 new source feature records with rank 3, 4 or 5 (state or federally endangered or threatened species) included in SOA_7 and SOA_8, respectively. Deadlines and work procedures have been put in place to ensure updates of the SOA and Source Feature files are ready for release every six months on a January/July schedule.
- The state (S) ranks for species were updated in the Biotics database to reflect the adoption of species status changes.
- Staff have been participating as a pilot program in the roll-out of NatureServe's Kestrel, a mobile observation system that is a component of the next generation of the Biotics database (Biotics 5) and which will allow for online data entry of observation data as well as integrate with the Biotics database. Staff have been working with NJDEP's Bureau of GIS (BGIS) to set up map services to serve up NJ-specific data layers that can be used by Kestrel so that staff can evaluate it and decide if it will provide most of the same functionality that was being developed in *NJ Wildlife Tracker* by Rutgers University's Center for Remote Sensing and Spatial Analysis (CRSSA).
- A data exchange with NatureServe did not occur during the reporting period in anticipation of the conversion to Biotics 5 in the summer 2012. The conversion to Biotics 5 will enable automatic data exchanges, unlike the current system that entails about a week of staff time. The release of Biotics 5 is now scheduled for release in summer 2013.
- CWF staff performed outreach during the reporting period to inform the public about reporting rare wildlife and to inform them how the data is used. Presentations were given at the Association of New Jersey Environmental Commissions' annual meeting in October 2011 as well as at a Threatened and Endangered Species short course at Rutgers University in May 2012. A blog entry was also written and posted on the CWF webpage.

Conclusions:

- The number of rare animals records received (2,022) was similar to the last reporting period (2,098). Biotics staff entered more records into Biotics than were received during this segment, though only about 60% as many (2,734) as the previous reporting period (4,579), mainly because of the push during the last reporting period to review and enter records in anticipation of the creation of the SOA file (SOA_7) used to value habitat in the revised Landscape Project mapping. The number of records in the backlog has increased.
- Approximately 37% of animal records in Biotics still need to be quality-controlled.
- A schedule of releasing an updated SOA file every six month was achieved during this segment and steps were put in place to ensure continued release of updates every six months.

- The review of NatureServe's Kestrel product has been progressing very slowly due mainly to NatureServe's focus on Biotics 5 and its release now being behind schedule. NatureServe staff has not been able to dedicate much time to Kestrel resulting in delays for the set up of a customized NJ system for ENSP staff to review. It has the potential to be much less costly in the long-term and integrate more seamlessly with the Biotics database than *NJ Wildlife Tracker*.
- The delay of the release of Biotics 5 is resulting in the NJ dataset NatureServe has to be increasingly outdated. It is ideal to have NatureServe handle data requests for multi-jurisdictional rare species data to avoid having ENSP staff time spent on preparing datasets, but that because a less viable option as the dataset becomes more outdated.

Recommendations:

- Continue to allow a small number of staff in field offices to enter data into Biotics via Citrix to help with the backlog of data entry and quality control. Hire contract employees and seasonal interns as funding allows to further reduce backlog.
- Continue to follow the deadlines and work procedures put in place to ensure an update of the SOA and Source Feature files are ready for release every six months.
- Continue to work with NJDEP's BGIS and NatureServe to set up a NJ specific Kestrel system and have staff review the system to make a decision about whether or not it will replace *NJ Wildlife Tracker* for our program's online data submittal/integration with Biotics database needs.
- Continue open lines of communication with NatureServe so that proper preparations can be made for the roll-out in NJ of the next generation of Biotics.
- Decide if another manual data exchange will be necessary with NatureServe given the delayed anticipated release of Biotics5.
- Continue to perform outreach about the rare species database, procedure for submitting data, and how the data is used.

JOB 3: Landscape Project Implementation

Project Leader: Patrick Woerner

OBJECTIVE: Build knowledge of critical habitat locations and disseminate Landscape Project data and training to guide land management, habitat conservation and acquisition, and land planning at all levels of government and non-government organizations.

Key Findings:

- Project staff provided 15 Landscape Project GIS training/information sessions attended by a total of approximately 300 people.
- Project staff coordinated and conducted GIS training and provided guidance to representatives of municipal agencies, environmental commissions, county planning agencies, state agencies, NGOs, private consulting firms, and the general public.
- Project staff presented "Wildlife Habitat Mapping for Land-use Planning and Species Conservation" at the 26th Annual Northeast Arc User Group (NEARC) Conference in Saratoga Springs, NY.
- ENSP staff met with U.S. Fish and Wildlife Service and provided an overview of Landscape Project Version 3.1 that was primarily focused on Federal listed wildlife species.
- A report documenting the methods used to create Version 3.1 was redesigned, updated and published on ENSP's website (http://www.state.nj.us/dep/fgw/ensp/landscape/lp_report_3_1.pdf), and 500 hardcopies were printed for distribution at Landscape Project Training and Information events.
- The Landscape Project Training and Information webpage was redesigned and updated (http://www.state.nj.us/dep/fgw/ensp/landscape/landscape_train.htm), along with presentations, tutorials and other training and supplemental materials.

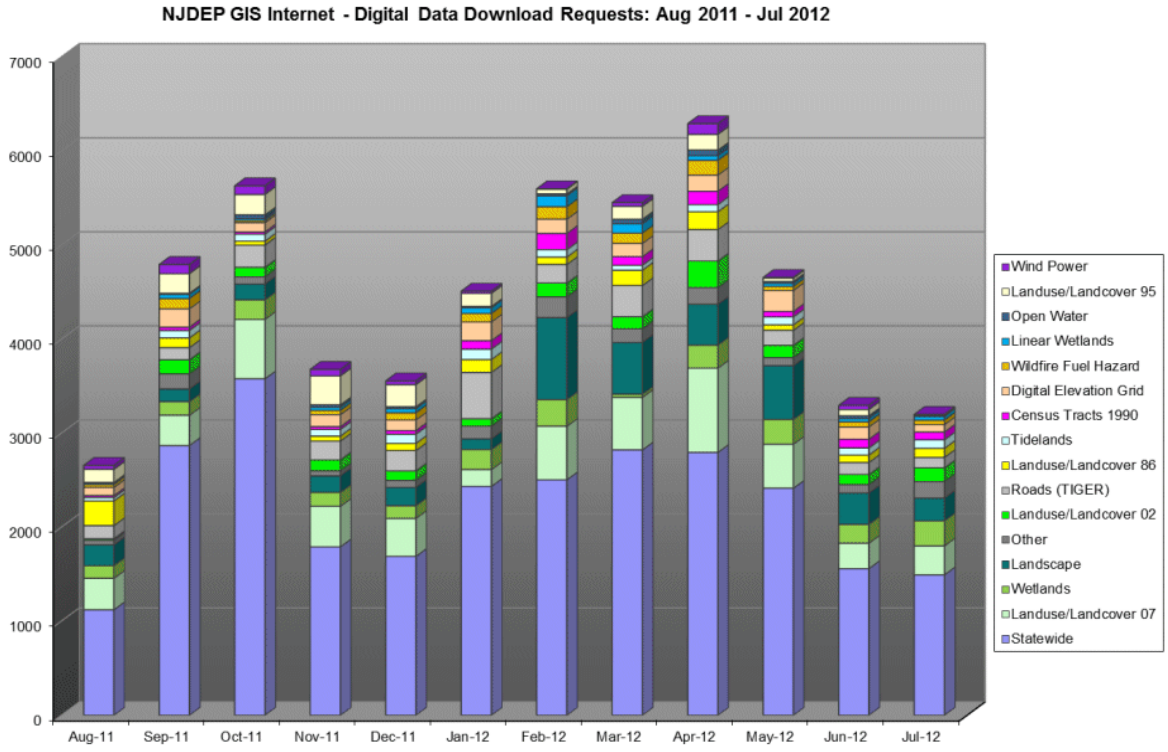
- A Landscape Project Training and Information Webinar program was designed for use over Citrix GoToWebinar software allowing for up to 500 remote participants. The first webinar was completed August 10, 2012 and was successful based on user feedback.
- Landscape Project data was the second-most downloaded DEP GIS data set with a total of 3,949 download requests between August 2011 and July 2012:

NJDEP GIS Internet – Digital Data Download Requests: August 2011 – July 2012

(Sorted Alphabetically)

Directory	Aug 2011	Sep 2011	Oct 2011	Nov 2011	Dec 2011	Jan 2012	Feb 2012	Mar 2012	Apr 2012	May 2012	Jun 2012	Jul 2012	Year Total
Census Tracts 1990	20	36	23	30	100	90	173	92	141	58	93	83	939
Cross Acceptance (see detail table)	4	25	17	26	9	20	23	12	33	8	15	20	212
Digital Elevation Grid	88	195	99	127	76	199	152	141	172	223	130	79	1681
Integrated Reports 2002	19	62	49	6	25	45	111	73	70	42	24	65	591
Integrated Reports 2004	6	49	4	8	15	51	63	33	46	20	30	61	386
Integrated Reports 2008	20	24	8	14	27	20	24	28	30	15	18	10	238
Integrated Reports 2010											4	21	25
Landscape	221	135	168	176	135	114	871	550	434	571	333	241	3949
Landuse/Landcover 86	262	103	42	53	98	137	79	163	190	58	79	96	1360
Landuse/Landcover 95	138	207	217	307	235	138	50	136	167	34	65	7	1701
Landuse/Landcover 02	17	151	100	116	113	77	147	127	281	131	106	145	1511
Landuse/Landcover 07	335	323	632	432	404	179	571	558	897	468	271	308	5378
Linear Wetlands	17	46	20	32	39	62	117	99	50	32	36	40	590
Open Water	7	12	41	28	20	14	20	49	60	22	30	9	312
Roads (TIGER)	139	129	236	200	194	493	197	332	334	160	128	111	2653
Statewide (see detail table)	1123	2869	3579	1792	1691	2435	2505	2823	2796	2416	1560	1494	27083
Tidelands	37	79	75	71	45	111	79	53	77	85	76	91	879
Wetlands	134	144	208	147	216	213	283	355	245	264	200	267	2676
Wildfire Fuel Hazard	29	108	22	45	75	90	131	109	156	43	54	47	909
Wind Power	42	98	92	69	40	23	4	40	114	7	45	5	579
Total	2658	4795	5632	3679	3557	4511	5600	5773	6293	4657	3297	3200	53652

Source: NJDEP, Bureau of Geographic Information Systems



Source: NJDEP, Bureau of Geographic Information Systems

- Three Landscape Project training and information sessions were conducted for DEP staff at the request of DEP's Division of Land Use Management.
- ENSP conducted Landscape Project information sessions for county planning agencies and stakeholders at the request of the Gloucester County Division of Planning and the Cumberland County Department of Planning and Economic Development.
- A GIS and Landscape Project training and information session was held for NJ Department of Transportation (DOT) environmental review staff.
- ENSP GIS Staff is scheduled to give a presentation on Version 3.1 of the Landscape Project at the Mid-Atlantic Chapter of Urban and Regional Information Systems Biannual Conference in late October.
- ENSP GIS staff designed, coordinated and conducted a full day GIS training session for ENSP biologist staff that upgraded from older versions of GIS software to ArcGIS 10.x. The training session covered GIS tasks for environmental review, survey data analysis, species data conversion, processing, and development for inclusion in Biotics and Landscape Project.
- Provided data and technical guidance to the Open Space Institute (OSI) for the development of habitat prioritization mapping for the Delaware Bayshore Region. The mapping utilized derivatives of Landscape Version 3.1 data combined with other datasets in order to direct preservation funding priorities in the NJ Bayshore region. OSI's mapping was the first region-wide application of Version 3.1 Landscape Project data.
- ENSP reviewed disputed future Sewer Service Areas (SSAs) based on Landscape Project data in Sussex County and delivered its results to DEP's Office of Land Use Planning. The review was requested for six towns: Andover Boro, Franklin Boro, Hamburg Boro, Hardyston Twp, Hopatcong Boro and Stanhope Boro. These were areas that Sussex County Planning requested DEP evaluate and consider taking out of the DEP's current Environmentally Sensitive Areas (ESAs) and putting into SSAs. Approximately 58% of the disputed areas ENSP determined should be excluded from sewer service. Approximately 20% of the disputed areas were not mapped as Environmentally Sensitive Area (ESA) based on the Landscape Project -- they were mapped as ESA for other environmental concerns and ENSP had no concerns regarding threatened and endangered animal species in those areas. The remaining 22% of the disputed areas were areas of Landscape Project rank 3, 4, 5 for which ENSP concluded, based on "desktop" suitability analysis, could be put into SSA.
- Staff continued to provide support to the Division of Natural and Historic Resources' (NHR) *Standard Operating Procedure* for screening management and other actions to determine if they will have an adverse impact on threatened and endangered species habitat.

Conclusions:

- Providing Landscape Project GIS training and information sessions is an essential means of disseminating guidance information and proactively addressing issues of misinterpretation and misuse of Landscape Project products.
- Communication and information on the Landscape maps and their limitations is vital as the Department incorporates the mapping into rules and regulations.
- Expanding the Landscape Training and Information program by offering a GoToWebinar option for remote participants is an effective means for reaching a wider user audience.
- Both the utility of Landscape data and the impact of outreach and dissemination efforts are reflected in the volume of data download requests.
- Landscape Project data serves as a vital basis for analysis such as habitat prioritization and environmental review.

Recommendations:

- Continue to provide guidance to state, federal, and municipal agencies and conservation groups.
- Continue to promote the appropriate application of Landscape Project maps to land-use regulation and conservation planning. In doing so, the Department will continue to afford transparency and predictability to the land-use permitting and development process.

- Continue to promote the integration and use of Landscape Project GIS data among and municipal and county planners.
- Continue development, and expand use, of the GoToWebinar tool to support outreach and dissemination efforts.
- In coordination with NJDEP's Bureau of GIS, continue to track data download statistics for Landscape Project data.
- Design a pilot project that analyzes wildlife habitat change utilizing the Landscape Project method applied to the 1986, 1995, 2002, and 2007 land-use/land-cover (LULC). Results of this analysis will provide ENSP with data to help prioritize work for particular species and their habitats. Data produced from the analysis will also provide a basis for species status assessments, recovery plans and additional analyses such as evaluating habitat change in regulated vs. unregulated areas, evaluating habitat conservation planning efforts, and evaluating other land-use planning, land management and preservation efforts.
- Produce materials upon the next update to the Landscape Project to support the training and information program including printing of reports, presentations, tutorials, and other supplemental products in order to facilitate use of the Landscape Project's wildlife habitat mapping.