Evaluating how New York Natural Heritage Program information affects development projects in New York State

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EVALUATING HOW NEW YORK NATURAL HERITAGE PROGRAM INFORMATION AFFECTS DEVELOPMENT PROJECTS IN NEW YORK STATE

by

Tara Salerno

Abstract of a Thesis
Submitted to the University at Albany, State University of New York
in Partial Fulfillment of
the Requirements for the Degree of
Master of Science

College of Arts & Sciences
Department of Biological Sciences
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Abstract

Is New York Natural Heritage Program (NYNHP) information used to affect land-use decisions in New York State? A seemingly simple question, yet it had no answer. The NYNHP maintains a comprehensive database on the status and location of rare species and significant natural communities throughout New York State. The NYNHP uses this database to provide information to consulting firms, project applicants, developers, local governments, state and federal agencies, private organizations, non-profits, the environmental conservation community, and the general public (together referred to as requestors) with the intent that such information will be used to aid in land-use decisions that will benefit rare species and/or their habitat. Many of the projects the NYNHP provides information for are development projects that are going through an environmental review process and need to determine if rare species and/or significant natural communities could be negatively impacted by the project. Once NYNHP information is provided to a requestor there is little to no follow-up conducted, therefore, the NYNHP does not know if its information is being used for its intended purpose. To determine how NYNHP information is being used and how NYNHP can increase and/or improve the provision and use of its information in land-use decisions I conducted an online survey of 381 NYNHP requestors. The survey was conducted between September 20, 2010 and November 9, 2010, and had a 62% response rate. I found that NYNHP information does affect land-use decisions in New York State and that requestors are taking actions that could enhance biodiversity conservation in the state. Requestors are contacting the NYNHP to comply with regulatory procedures and they are contacting other entities for additional assistance and clarification after receiving initial information
from the NYNHP. The survey also found that most requestors treat all NYNHP records (state-listed species, rare species, and significant natural communities) equally in terms of their next actions. Responses were split as to whether or not fieldwork was conducted after receiving initial NYNHP information, but the majority of fieldwork was conducted by environmental consulting firms. Also the majority of respondents determined that their project would not impact rare species or significant natural communities, after receiving initial NYNHP information. They did, however, take appropriate actions to make that determination such as conducting fieldwork, assessing the project site remotely, following up with the NYNHP, and/or contacting the US Fish & Wildlife Service and/or the New York State Department of Environmental Conservation (DEC). Of those that determined their project likely would impact rare species and/or significant natural communities, a statistically significant number of them dropped, modified, or mitigated their project as a result of these potential impacts. As for the NYNHP increasing and/or improving the use and provision of its information, several actions can be taken. The NYNHP could provide additional information regarding: DEC contacts; guidance about incorporating NYNHP information into the regulatory review process; species habitat and biology; and significant natural communities. Workshops about accessing, interpreting, and applying NYNHP information could also be provided. Lastly, requestors demonstrated a great willingness to submit requests and receive responses electronically; a protocol should be implemented for this. The NYNHP could also benefit from re-running this survey to compare results, as well as conducting a survey of NYNHP requestors that are working on conservation, management, and/or planning projects. A survey could also be conducted with the towns and cities in New York State to determine
if they known about and/or use NYNHP information when funding, approving, or undertaking a project. The NYNHP could also start an education and outreach program with its requestors to further improve the use of its information.
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Objective D. Determine how NYNHP can increase and/or improve the provision and use of its information in land-use decisions and hence biodiversity conservation in New York State.

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Introduction

New York State requires routine environmental reviews for most activities proposed throughout the state, in part to determine if endangered or threatened animal or plant species occur within project areas, and also through the State Environmental Quality Review Act (SEQR). SEQR is intended to consider environmental impacts of certain proposed projects or activities along with social and economic impacts. Like SEQR, there is an environmental review process at the federal level enacted through the National Environmental Policy Act (NEPA). In addition, New York City has an environmental review process known as City Environmental Quality Review (CEQR).

There are many participants in each of these environmental review processes, each with a separate role to play. Participants can include: project applicants, developers, environmental consultants, local governments, state and federal agencies, private organizations, non-profits, the environmental conservation community, and the general public.

I am an Environmental Review Specialist with the New York Natural Heritage Program (NYNHP), a partnership between the New York State Department of Environmental Conservation (DEC), a state agency, and The Nature Conservancy (TNC), a non-profit. The NYNHP is, therefore, one of the participants in the environmental review process, our role being to provide baseline natural resources information. Our mission is to facilitate conservation of New York’s biodiversity by providing comprehensive information and scientific expertise on rare species and natural ecosystems to resource managers and other conservation partners. We maintain a comprehensive database on the status and location of rare species and significant natural
communities. The NYNHP database currently tracks more than 12,500 locations of rare species and significant natural communities occurring across New York State; this includes 174 natural community types, 727 rare plant species, and 432 rare animal species. Along with the status and location of rare species and significant natural communities, our database includes information on the relative rarity of each species and community, an assessment of the quality of their occurrences, and descriptions of sites.

As an Environmental Review Specialist, I respond to requests for information (approximately 1,500 to 1,800 a year) from consulting firms, project applicants, developers, local governments, state and federal agencies, private organizations, non-profits, the environmental conservation community, and the general public (together referred to as requestors), using the Heritage Program’s biodiversity information management systems and geographic information system (GIS). Proposed projects are screened for potential impacts on rare animals, rare plants, and significant natural communities. In some cases customized reports, lists, maps, and GIS data are also provided, with the intent that such information will be used to aid in land-use and land management decisions that will benefit selected rare species and/or their habitat.

Most of the projects screened (approximately 95%) are proposed development projects, ranging from small-scale projects such as cell towers to large-scale projects such as commercial wind farms or power transmission lines. Also in this group are infrastructure maintenance projects, such as road and pipeline rehabilitation. In addition to development projects, Heritage requests are received for conservation, management, and/or planning projects not related to development of the land (approximately 90 requests a year). For example, a town may be working on a comprehensive plan or a non-
profit may be working on a conservation easement. Others like forestry companies may be working on management plans for their properties. Heritage information is also provided to government agencies that are doing a combination of screenings for development projects and using the information for conservation, management, and/or planning purposes.

Once information is provided to a requestor, whether for a development project or for a conservation, management, and/or planning project, there is little to no follow-up conducted by the NYNHP and the extent to which this information is used in aiding land-use and land management decisions is unknown. Stein et al. (2000) states that Heritage Programs help to reduce or avoid impacts to rare species and significant natural communities by providing information on their locations early in the environmental review and land-use planning processes. In fact, however, we do not have data to support the notion that screening and distribution of Heritage information leads to actions that may help conserve rare species and significant natural communities in New York State. Theobald et al. (2000) also noted that while incorporating biological information into land-use planning has been “heralded loudly,” there has been little research evaluating how such information has influenced land-use decisions. Knowing what role this information plays in follow-up actions on projects, land-use decision making, and whether or not it is actually helping to support the conservation of rare species and significant natural communities would be very beneficial to the Natural Heritage Program, to the DEC, and to the state as a whole. Thus, the question driving my investigation is as follows: Is NYNHP information used to affect land-use decisions in New York State? I hypothesize that, NYNHP information positively affects land-use
decision making in New York State and therefore enhances biodiversity conservation in the state. There were four objectives to the study:

A. Determine the reason the requestor contacted the NYNHP.

B. Determine which entities (e.g., wildlife agencies) were contacted regarding information on rare species and significant natural communities.

C. Determine if and how NYNHP information is used to affect land-use decisions in New York State.

D. Determine how NYNHP can increase and/or improve the provision and use of its information in land-use decisions and hence biodiversity conservation in New York State.

**Background**

*Environmental Review Process*

Due to longstanding tradition and laws, the majority of land-use decisions in the United States are made at the local level and by the landowner. While the government can sometimes constrain development, it is usually done by the local government, not at the state or federal level. Therefore, land-use decisions and oversight in this country are many and complex, and are spread out through space and time (Porter 1997; Theobald et al. 2000; Azerrad and Nilon 2006).

As mentioned in the introduction there are environmental review processes such as SEQRA, NEPA, and CEQR that many land-use decisions in New York State must go through before being funded, approved, or undertaken. Often, a local government is the lead agency, or is the entity in charge of making a final decision. Projects must also
comply with the federal Endangered Species Act as well as New York State Endangered Species Regulations.

There are several steps to an environmental review process as it relates to rare species and significant natural communities, and the role that the NYNHP plays. After a project is conceptualized, a request for information is sent to the NYNHP. The NYNHP then responds to the request with a preliminary letter stating whether or not known locations of rare species and/or significant natural communities are nearby that are potentially affected. No effort is made at this time to indicate to the requestor whether or not their project will impact any species or habitat. If there are known locations nearby a report and sometimes a map will accompany the letter. The report gives details on which rare species and significant natural communities are nearby and can include information such as their location, their last date documented, their state and federal listing (level of state and federal legal protection), their rank (rarity), and management comments. Once a requestor receives the initial NYNHP information, they then review it and make their own determination as to possible impacts and next steps. They can then either determine that no impacts to the rare species and/or significant natural communities will be made or that there will be impacts, in which case what additional actions might be required or can be taken to avoid, minimize, or mitigate those impacts. To make a determination of possible impacts the requestor can do things such as contact wildlife agencies, conduct fieldwork, and/or assess a site remotely using aerial photography. Of course, a third option is the requestor might disregard the response letter/information entirely. Figure 1 presents a schematic of this process.
Figure 1. Schematic of the environmental review process as it pertains to the NYNHP.

Each of the four objectives presented in the introduction can be linked to one or more of the steps above. Objective A (determine the reason the requestor contacted the NYNHP) is linked to the request being sent to the NYNHP. Objective B (determine which entities were contacted regarding information on rare species and significant natural communities) is linked to the requestor reviewing the NYNHP information. Objective C (determine if and how NYNHP information is used to affect land-use decisions in New York State) is linked to the requestor reviewing the NYNHP information, the determination of impacts, the no impact determination, as well as the impact determination and the actions taken regarding that impact. Objective D (determine how NYNHP can increase and/or improve the provision and use of its information in land-use decisions and hence biodiversity conservation in New York State) is linked to the request being sent to the NYNHP, the NYNHP responding to the request, the requestor reviewing the NYNHP information, and the determination of impacts (Figure 2).
Natural Heritage Programs, Land-Use Planning, and Evaluations

All 50 US states, 11 provinces and territories of Canada, and many countries and territories of Latin America and the Caribbean have Natural Heritage Programs or Conservation Data Centers. They are all part of the NatureServe Network. Like the NYNHP all of these member programs collect and maintain information on rare species and significant natural communities (NatureServe 2011).

To find out if other Heritage Programs have done any follow-up or evaluation as to how their information is used by their requestors I used the NatureServe e-mail list for Heritage Data Managers and sent an e-mail on January 13, 2011 asking that question. I received responses from the Oregon, Texas, and Wyoming Natural Heritage Programs stating they have not conducted any official follow-up or evaluation (Arnett 2011; Gottfried 2011; Wise 2011). The Virginia Natural Heritage Program (VNHP) responded that they conducted a “project review information services survey” in the summer of 2010 and received 77 responses. Their survey was an effort to improve their information services (Hypes 2011). Virginia’s survey focused on how requestors access Heritage information, what information they found useful, cost effectiveness, value of the information, and who uses the information (Virginia Natural Heritage Program 2010).
While their survey did not directly relate to this effort, theirs was more focused on customer service rather than how their information is being used, they did have some meaningful results. Of the information services VNHP provides, the majority of respondents (63.2%) said they use their project review service (Virginia Natural Heritage Program 2010). Similarly the majority of requests the NYNHP receives are for project reviews. When asked how beneficial/useful the VNHP project review comments are, the majority of respondents (54.7%) said they are applicable for their project needs. The majority of respondents (78.9%) also said it is easy to understand what data are available, how to access them, and at what price (Virginia Natural Heritage Program 2010). Virginia varies from New York in that the NYNHP does not charge for information. When asked if the cost of digital information services provided by the VNHP was cost effective the majority of respondents (53.3%) said no opinion. The VNHP has a Natural Heritage Data Explorer Website that provides information on things such as Natural Heritage Resources, karsts, Virginia Conservation Lands Needs Assessment, watersheds, NWI wetlands, trails, conservation lands, etc. When asked what information they use from this website the majority of respondents (86.5%) said Natural Heritage Resources (Virginia Natural Heritage Program 2010). New York has two similar sites: the Environmental Resource Mapper and New York Nature Explorer. However, these were not the subjects of the survey presented here. The VNHP did find that 75% of respondents thought their website was user friendly and they were able to navigate it and complete their task without any problems. When asked how they would rate the value of the Natural Heritage Data Explorer Website 58% of people said useful. Lastly, the majority of people who responded to the VNHP survey said they are government
planners (29.3%), followed by environmental consultants (22.7%) (Virginia Natural Heritage Program 2010). This varies from the survey presented here in that the majority of people asked to take this survey were environmental consultants (approximately 90%).

The Pennsylvania Natural Heritage Program (PNHP) also responded that they conducted a survey in 2010. Their survey focused on Pennsylvania County Planners and how they use Heritage information (Klugman 2011). Since 1990 the Pennsylvania Natural Heritage Program has had a County Natural Heritage Inventory program that provides biodiversity and conservation data to municipalities. These County Natural Heritage Inventories as well as the State Wildlife Action Plan were the center of Pennsylvania’s 2010 survey (Tracey 2011a). The survey consisted of four parts: Wildlife and State Wildlife Action Plan; County Natural Heritage Inventory; Use of Conservation Data in Planning; and Demographic/Background Information (Pennsylvania Natural Heritage Program 2010). They had also conducted a survey in 2003 (Tracey 2011b). The 2003 survey focused on County Planners and asked about the planners’ use of County Natural Heritage Inventories (Pennsylvania Natural Heritage Program 2003). However, analyzed results from that survey were not readily available and therefore, are not discussed here. While the PNHP’s surveys focused on planners and their use of the PNHP information, and my survey did not (as will be discussed in the methods section), there are still some pertinent results from the 2010 PNHP survey that relate to my survey.

First, the PNHP found that nearly two-thirds of their respondents use their County Inventory information when reviewing development projects (Tracey 2011a; Tracey 2011c). Second, many of the PNHP respondents indicated they worked with other agencies or experts regarding issues in their planning efforts such as the Pennsylvania
Department of Natural Resources, Pennsylvania Fish and Boat Commission, Pennsylvania Game Commission, United States Department of Agriculture Natural Resource Conservation Service (USDA-NRCS), conservation districts, land trusts, and colleges and universities. Lastly, when asked which features they would like to see implemented in future PNHP County Inventories, the respondents said internet based mapping and report content (over 70% said very useful); more in depth planning information (over 60% said very useful); and more outreach during and after projects (over 50% said very useful) (Tracey 2011c). Tracey (2011a) concluded that providing information through a web-based GIS will help to improve the use of PNHP data by planners and others responsible for land-use decision making.

In July 1994 a mail survey of all state Natural Heritage Programs was conducted by Cheryl Cort, of the Graduate Program in Sustainable Development and Conservation Biology at the University of Maryland, to determine how such information is used in land-use planning. A few notable results and conclusions came from that survey. First, Heritage data tends to be used more for environmental review of proposed projects than it does for comprehensive planning. This was true for the local level as well as for the state and federal level. This result suggests that protecting biodiversity tends to be reactive rather than proactive (Cort 1996). This result is also consistent with the types of requests the NYNHP receives. At the low end we receive approximately 1,500 requests a year for environmental review of development projects. We only receive approximately 90 requests a year for conservation, management, and/or planning projects. Cort (1996) concluded that Natural Heritage Programs could partake in education and outreach to local planners in order to improve the use of Heritage information for planning purposes.
By holding workshops and providing planners with the most up-to-date Heritage information the planners would learn how to incorporate that information into their work. Likewise, Natural Heritage Programs could learn what types of biodiversity information are most useful to planners (Cort 1996).

Azerrad and Nilon (2006) conducted an 18-question survey of 1,200 planners and consultants that work with local governments in Washington State to determine their use and perception of technical publications created by the Washington Department of Fish and Wildlife (WDFW). The publications known as Management Recommendations for Washington’s Priority Habitat and Species (PHS) were created to provide guidance regarding planning issues, species, and habitats. The majority of planners and consultants who responded to the survey worked on current or site-scale projects rather than long-range planning. The most notable finding from their study that pertains to this study is that respondents said they would like more personal assistance from the WDFW staff. They would also like workshops in order to learn how to better implement PHS into their work.

**Surveys as a Tool for Evaluation**

Surveys are an effective tool for evaluating programs and obtaining people’s opinions on improvements that can be made to those programs. An entire population or a subset can be sampled. In the past surveys were conducted in person, over the phone, or by mail. With today’s technology it is possible to conduct a survey online which has the power to give you faster results since the survey answers are automatically captured and can be downloaded into a spreadsheet or database for analysis. With this automatic
capture of answers there is no need to enter this information manually which eliminates transcription errors.

There are many considerations that go into the development and implementation of a survey in order for it to be successful. An excellent resource for this information is a book written by Don Dillman, Jolene Smyth, and Leah Melani Christian titled “Internet, Mail, and Mixed-Mode Surveys: The Tailored Design Method.” This book goes into great detail about many of the considerations discussed below.

One consideration when conducting a survey is which method or methods will be used. Will the survey be conducted by phone, in person, through mail, online, or a combination? One must know their audience to make this determination otherwise there could be sampling errors. For example, while most people may now have access to the internet there may still be some people in rural areas that do not have access or some segments of the population that do not have the technological ability to use the internet. If conducting a survey online one must make sure their target audience can be reached by this method. Likewise, if one plans to conduct a phone survey they must be sure they are able to obtain phone numbers for their audience. This may be difficult if their audience no longer has a landline and relies solely on a cell phone, for which that number may not be published. If one is going to conduct a survey using a combination of methods (mixed-mode) care must be taken in how the questions are worded and presented in order to not introduce bias. Research has shown that different survey modes may produce different answers to the same question. The consideration of method also relates to coverage and sample size. Unless conducting a census, one must make sure their sample size is adequately large enough in order to obtain enough responses and be able to make
inferences about the entire population. Sometimes using a mixed-mode survey can help to reach a larger audience or sample of the population and also increase response rate (Dillman et al. 2009).

Response rate is another consideration to take into account. One must have a high enough response rate in order to make inferences about the larger population. Response rates prior to the 1960’s were commonly as high as 70%-90%, but those rates have become much more variable (Dillman et al. 2009). Current day surveys may receive less than a 2% response rate or soar past 85%. On average, internal surveys (i.e., employee surveys) will obtain a 30%-40% response rate and external surveys will obtain a 10%-15% response rate (SurveyGizmo 2010). There are things that can be done to increase response rates. One can personalize contacts by using the recipient’s name. A token of appreciation such as money can be sent with the survey. Multiple contacts should be used. One can even send a pre-notice to alert their target audience to expect a survey within a few days. Information regarding the nature and purpose of the survey should be included with the survey as well as other pertinent information that may encourage people to complete the survey, such as the survey being voluntary, or that no identifying information will be collected, or that there will be no negative ramifications to them due to their answers. For people who do not respond to the survey follow-up contacts should be sent. The first follow-up should be sent approximately 10 days after the original contact, a second follow-up approximately a week later, and a third follow-up approximately a week to 10 days later (Dillman et al. 2009; Jody Enck pers. comm.). The time of year a survey is conducted is also important and needs to be based on the target audience and their schedules. In general, the time between Labor Day and Thanksgiving
is a good time of year to conduct a survey and increase response rate, as well as between January and February (Jody Enck pers. comm.). Also, one must make sure mailings are not mistaken for junk mail, it is very important they be professional looking (Dillman et al. 2009).

Another major consideration is the types of questions that will be asked and how they are worded and presented. Questions can be open-ended or closed-ended. Open-ended questions allow the survey taker to write in a response, where closed-ended questions ask the survey taker to choose an existing answer(s). Closed-ended questions can be ordinal or nominal with nominal questions allowing a single or multiple answers. No matter which type is used, questions must be clearly written in order to elicit reliable answers and so that everyone interprets the question in the same manner. Also, questions that use ordinal scales must be balanced and use an appropriate scale length, generally four or five categories. An example of a balanced ordinal scale would be: “not at all helpful,” “slightly helpful,” “moderately helpful,” and “very helpful.” The layout or design of the survey is also important so the survey taker knows how to adequately navigate it and respond to questions. Clear directions should be provided and questions should be grouped in a logical order (Dillman et al. 2009).

It is also important to consider the organization (if any) that is sponsoring a survey as that can impact people’s responses to questions and also whether or not they participate in the survey. If the survey is sponsored by an organization it is also important to find out about any requirements or constraints that organization may have on designing and implementing surveys. For example some institutions require approval from an
Institutional Review Board (IRB) before a survey can be conducted in order to protect the rights and well-being of human subjects (Dillman et al. 2009).

This discussion of things to consider when developing and implementing a survey only scratches the surface. A much more in-depth discussion can be found in the book referenced above by Dillman et al. It is also highly advisable to work with a professional when developing and implementing a survey to obtain the most reliable results possible.

Methods

To find out whether or not NYNHP information is used to affect land-use decisions in New York State, I conducted an online survey of NYNHP information requestors (a requestor being an individual at a company and not the company itself; one company can have multiple requestors). My sample was chosen only from the population of requestors who were working on development projects. I did not sample from the population of requestors who were working on conservation, management, and/or planning projects. I worked with the Human Dimensions Research Unit at Cornell University to develop the survey. My survey and study protocol (L10275) were reviewed by the Institutional Review Board (IRB) at the University at Albany, State University of New York (SUNY). It was determined that my study did not require IRB approval because it did not involve the collection of any personal identifiable information about human subjects, so it is not covered under the human protections regulations as defined in Title 45 CFR §46.102(f).

The NYNHP receives approximately 1,500 to 1,800 requests a year for screenings of development projects to determine potential impacts to rare species and significant
natural communities. These numbers do not include requests that may be sent to DEC Regional staff. Approximately half of the requests the NYNHP receives have rare species and/or significant natural communities reported as being potentially impacted by the development project; i.e., “hits.” The requests come from a large pool of requestors many of whom send multiple requests each year. I selected and sent the survey invitation letter (Appendix A) to a sample of the requestors who had rare species and/or significant natural communities reported to them for their project. If a requestor was selected more than once to be included in the sample, only one survey invitation letter was sent.

For each of the last five years (2006-2010), I have a database containing records of who requested data and what type of project they were working on. I used the records from June 2009 through May 2010 to generate a sample of requestors to send a survey invitation letter to. Requests from this time period were selected since enough time may have passed for the projects to have action taken on them or to have been completed, but not too much time that recall of details may be a problem. To get a sample I took the records and only included the requests for development projects that had rare species and/or significant natural communities (i.e., “hits”) reported to them. This turned out to be 656 records. Each record corresponds to a request from a requestor. I then added a field and generated a random number for each record. Then I sorted the records by individual requestors and the random number assigned. If a requestor had multiple records I used the first record based on the random number assigned. Therefore, my final sample turned out to be 381 requestors, all of whom were sent a survey invitation letter.

The survey was posted online using SurveyGizmo. The survey URL was http://nynhp.survey.sgizmo.com/s3/. I followed the process the Human Dimensions
Research Unit at Cornell University uses for conducting surveys and follow-ups, which was developed by Don Dillman et al. (2009). The process consists of four steps:

1. On September 20, 2010, 381 invitation letters were mailed directing the requestors to the online survey. To encourage responses the invitation letter explained: a) the nature and purpose of the survey; b) that I work for the NYNHP; c) that the survey is voluntary; d) that no identifying information will be divulged; and e) that there will be no ramifications from the DEC or the NYNHP because of their answers. The letter also included a unique access code for each requestor. The access code allowed me to track respondents to the survey so that I could send reminder postcards to those who did not respond. All invitation letters and reminder postcards were sent via US Postal Service. This was done to maintain consistency between contacts and eliminate potential bias because I did not have e-mail addresses for everyone in my sample.

2. On September 30, 2010, 286 first reminder postcards were mailed to non-respondents.

3. On October 7, 2010, 231 second reminder postcards were mailed to non-respondents.

4. On October 18, 2010, 183 third reminder postcards were mailed to non-respondents.

5. The survey was closed on November 9, 2010.

At the close of the survey, 227 completed surveys (60%) and 53 partially completed surveys had been received. Additionally, five survey invitation letters were “undelivered” since the requestor was no longer with the company. A partially completed
survey occurs when someone does not finish the survey and make it to the thank you page, or someone enters an incorrect access code and is not able to access the survey. For the partially completed surveys that also had a completed survey (based on the access codes used) I did not use the partial survey in my data analysis; I used the completed survey. For the partially completed surveys that did not have a completed survey I used the partially completed survey. For one of my access codes, I had two partially completed surveys and no completed survey, so I used the partially completed survey that was done last, it was also the most completed survey. In all, I used 227 completed surveys and nine partially completed surveys (236 total) in the data analysis. I had a 60% response rate for completed surveys and a 62% response rate when the nine partially completed surveys were included.

Survey Format

The survey had three parts. The first part asked three general questions about using NYNHP information. It asked about the criteria used to determine whether or not to contact NYNHP (Question 1). Question 1 was multiple choice and allowed the survey taker to pick multiple answers. The last two questions were also multiple choice but only allowed single answers, and asked how the presence of state-listed species influences their subsequent actions (Question 2) and whether they give higher priority to state-listed plants, state-listed animals, or same priority to both (Question 3). These questions were aimed at answering Objectives A and C above. A copy of the survey is provided in Appendix B. Figure 3 shows how the survey questions relate to the environmental review process and each of the objectives previously discussed.
The second part of the survey asked the survey taker to answer the questions based on the NYNHP response they received to a specific project they requested information about. They were told which project to answer the questions about in their invitation letter asking them to participate in the survey. There were nine questions in this part aimed at addressing Objectives A, B, and C above. These nine questions consisted of fill in the blank, single answer multiple choice, and multiple answer multiple choice. The survey taker was asked: how they knew to contact the NYNHP (Question 4); why they requested NYNHP information (Question 5); what other entities they contacted for additional assistance after receiving NYNHP information (Question 6); whether fieldwork was conducted (Question 7) and if so by whom (Question 8); what determination was made about impacts to rare species and significant natural communities (Question 9); how that determination was made, if they determined there would not be impacts (Question 10); other actions taken regarding potential impacts to rare species and significant natural communities (Question 11); and if project modifications or mitigation were required for approval by a permitting or government agency (Question 12).
The third part of the survey had seven questions and focused on Objective D above. All seven questions were based on a four-point, unipolar ordinal scale. The first four questions asked the survey taker to rate the helpfulness of possible changes the NYNHP could make when providing information about rare species and significant natural communities. These changes included: providing the name of DEC contacts to discuss ramifications to rare species (Question 13); providing guidance about incorporating NYNHP information into NEPA, SEQRA, and CEQR (Question 14); providing guidance about incorporating NYNHP information into Environmental Assessment Forms or Environmental Impact Statements (Question 15); and providing more information on species habitats and biology (Question 16). The last three questions asked the survey taker to rate their willingness to: participate in an online workshop about accessing, interpreting, and applying NYNHP to development projects (Question 17); participate in an in-person workshop about the same topic (Question 18); and electronically submit and receive responses from the NYNHP if a process were put in place (Question 19).

The first two parts of the survey utilized skip logic which would move the survey taker onto a follow-up question or skip over them to the next question depending on how they answered a previous question. This was programmed into the design of the online survey and therefore the survey taker was unaware of it.

The survey also had a “Save and continue survey later” link at the top of each page so participants could enter their e-mail address and be sent a link that would take them back to the exact place they left off on the survey if they were unable to complete it in one sitting. However, if they did not use this link and left the survey before finishing it
a partially completed survey was generated, and if they returned to the survey they had to start from the beginning (which is how I ended up with partially completed and completed surveys for the same access codes).

At the advisement of Cornell University’s Human Dimensions Research Unit, the survey was set up with only a “Next” button at the bottom of each screen, and no “Back” button. This was done so participants would not go back and change answers after seeing future questions. SurveyGizmo also recommended not including a “Back” button when using skip logic. The skip logic can end up with errors if participants go backwards in the survey, and they could end up being asked questions they should not see, or vice versa, and not be asked questions they should be asked.

Data Analysis

I produced bar graphs showing the frequency of each answer choice for each of the survey questions. For Question 6 (third question in Part II of survey) and Question 11 (eighth question in Part II of survey), I produced additional bar graphs by grouping the answer choices. For Question 11, I also produced a bar graph for a filtered set of responses; those that answered “likely would impact” to Question 9 (sixth question in Part II of survey).

In addition, I calculated a Chi-square for Question 6 and a Chi-square for Question 11 to test if there was a statistically significant difference between the observed and expected frequencies.
Results

The following results are organized by the four main objectives to this survey. Results for specific survey questions are discussed within each objective.

Objective A. Determine the reason the requestor contacted the NYNHP.

Question 1 from Part I of the survey, and Questions 4 and 5 from Part II of the survey related to Objective A.

Question 1 asked what criteria are used to decide whether to contact the NYNHP for information on rare species and significant natural communities. The survey taker was allowed to choose multiple answers. All 236 surveys that were used for data analysis had an answer for this question (Figure 4). The most common answer was to ensure compliance with environmental review process requirements (164 people, 70%). The next two most common answers were if formal documents such as an Environmental Impact Statement were to be prepared (118 people, 50%) and if permits would be needed for a project (114 people, 48%). The two least common answers, aside from the “Other” option, were each selected by 39 respondents (17%). One answer was that they had no special criteria, they always contact the NYNHP. The other answer was that they contacted the NYNHP if the area to be disturbed has existing vegetation.
Question 1 - When you have a new project, what criteria do you use to decide whether to contact the NYNHP for information on rare species and significant natural communities? (Check all that apply.) (n=236)

1A - We have no special criteria we always contact the NYNHP
1B - We contact the NYNHP if there will be any ground disturbance
1C - We contact the NYNHP if the area to be disturbed has existing vegetation
1D - We contact the NYNHP if there will be any impacts to a stream or waterbody
1E - We contact the NYNHP if there will be any impacts to a wetland
1F - We contact the NYNHP to ensure compliance with an environmental review process (e.g., National Environmental Policy Act (NEPA), or with NY State Environmental Quality Review Act (SEQRA)) requirements
1G - We contact the NYNHP if formal documents (e.g., Environmental Assessment Form, Environmental Impact Statement) will be prepared
1H - We contact the NYNHP if a permit (e.g., wetland permit) or approval (e.g., lead agency approval) will be needed
1I - Other, please specify

Question 4 was a fill-in-the-blank and asked the survey taker how they knew to contact the NYNHP for information regarding their project. I grouped the answers into the following categories: standard procedure; requirement; website; knowledge that rare species or habitats were nearby; and either did not specify or simply stated that they sent a letter. Of the 229 respondents to this question, the greatest number (117 people, 51%) reported that contacting the NYNHP is standard procedure for their company (Figure 5). This was followed by 77 people (34%) who said they were fulfilling a requirement such as SEQRA, NEPA, or town requirement, for example. Eighteen people (8%) responded
that they knew from using DEC websites (Environmental Resource Mapper and New York Nature Explorer). The smallest number of people (4 people, 2%) said they had knowledge that a rare species or habitat was near their project. The other 13 responses (6%) either did not specify how they knew or they simply stated that they sent the NYNHP a request letter.

![Figure 5. Responses to Question 4 (fill-in-the-blank question, answers are grouped into categories).](image)

**Question 4 - How did you know to contact the NY Natural Heritage Program regarding this specific project/site? (n=229)**

- **4A - Standard procedure**
- **4B - Requirement (e.g., SEQRA, NEPA, permit, town requirement, etc.)**
- **4C - Website (Environmental Resource Mapper, New York Nature Explorer)**
- **4D - Knowledge that rare species or habitats were nearby**
- **4E - Did not specify/stated sent letter**

The second question in Part II, Question 5, asked why the survey taker requested NYNHP information for their project. Respondents were allowed to choose multiple answers and 233 people answered the question (Figure 6). The most common response was to comply with SEQRA (156 people, 67%). The second most common response was to obtain general background information on a site (100 people, 43%), followed by...
compliance with NEPA (85 people, 36%). The least number of people (17 people, 7%) answered to comply with CEQR.

![Figure 6. Responses to Question 5.](image)

**Figure 6. Responses to Question 5.**

**Question 5 - Why did you request information from the NY Natural Heritage Program regarding this specific project/site? (Check all that apply.) (n=233)**
- 5A - To comply with the National Environmental Policy Act (NEPA)
- 5B - To comply with the NY State Environmental Quality Review Act (SEQRA)
- 5C - To comply with the NY City Environmental Quality Review (CEQR)
- 5D - To comply with a Town or lead agency requirement
- 5E - To prepare a Short Form Environmental Assessment Form (EAF)
- 5F - To prepare a Long Form Environmental Assessment Form (EAF)
- 5G - To prepare an Environmental Impact Statement (EIS) / Draft EIS
- 5H - To obtain a federal permit
- 5I - To obtain a state permit
- 5J - To obtain Town or lead agency approval
- 5K - To obtain general background information on a site
- 5L - Other, please specify

**Objective B. Determine which entities were contacted regarding information on rare species and significant natural communities.**

Question 6 from Part II of the survey related to Objective B. Question 6 asked what entities the survey taker contacted for additional assistance or clarification after receiving initial information from the NYNHP for their project. Respondents were again allowed to choose multiple answers. Of the 229 people who responded, 84 (37%) said they did not contact other entities for assistance (Figure 7). This was followed by 72
people (31%) who said they contacted the US Fish & Wildlife Service. The third highest response came from 59 people (26%) who said they contacted one of the DEC Regional Offices. The smallest response was for contacting the DEC Central Office (14 people, 6%). In addition, 27 people (12%) said they re-contacted the NYNHP for more information.

![Figure 7. Responses to Question 6.](image)

**Question 6 -** What entities did you contact for additional assistance or clarification after you received initial information from the NY Natural Heritage Program for this specific project/site? *(Check all that apply.)* (**n=229**)

- 6A - I contacted no other entities for assistance
- 6B - I re-contacted the NY Natural Heritage Program for more information
- 6C - DEC - Central Office in Albany (other than the NYNHP)
- 6D - DEC - Regional Office
- 6E - US Fish & Wildlife Service
- 6F - Other, please specify

In addition to creating a bar graph of the answers to Question 6, I also grouped the answers into two categories and created a second bar graph, as well as performed a Chi-square ($\chi^2$) test. The two categories were, 1) contacted no other entities for assistance or 2) contacted other entities for assistance. If they selected “re-contacted the NYNHP” or if they selected “contacted at least one of the other agencies,” they were grouped into the
“contacted other entities” category. I also looked at the “Other” answers and grouped those. Five answers were removed because they picked “Other” but then only wrote in that their project was on hold or canceled. Therefore, 224 answers instead of the original 229 were used to produce Figure 8 and to perform the Chi-square test. A majority of respondents stated that they contacted other entities (132 people, 59%), while the other 92 people (41%) did not contact other entities.

![Figure 8. Responses to Question 6 (grouped the answers into categories, including the “Other” answers).](image)

Question 6 - What entities did you contact for additional assistance or clarification after you received initial information from the NY Natural Heritage Program for this specific project/site? (Check all that apply.) (n=224)

6A - Contacted no other entities for assistance or clarification
6B - Contacted other entities for assistance or clarification

To calculate the Chi-square for Question 6, I used the observed frequencies from grouping the answers. For expected frequency I assumed the answers would be random, therefore, 50% contacted no other entities and 50% contacted other entities (calculation shown in Appendix C). The Chi-square testing the hypothesis that the two groups were different, was statistically significant at the 1% level of probability ($\chi^2 = 7.14; \text{df} = 1; p = < 0.01$). The number of people who re-contacted the NYNHP or contacted other entities
for additional assistance or clarification after they received initial information from the NYNHP is greater than would be expected on the basis of chance.

**Objective C. Determine if and how NYNHP information is used to affect land-use decisions in New York State.**

Questions 2 and 3 from Part I of the survey, and Questions 7-12 from Part II of the survey related to Objective C.

*State-Listed Versus Unlisted*

Question 2 started out by explaining that the NYNHP provides information on rare species that are state-listed (threatened, endangered, or special concern) as well as rare species and significant natural communities that are not state-listed. It then asked how the presence of state-listed species influences the survey taker’s subsequent actions. There were three possible answers, of which the survey taker could choose only one. Two hundred thirty five people answered this question with the majority (161 people, 69%) saying any records on the NYNHP report are treated equally in terms of their next actions (Figure 9). These respondents were then skipped to the first question (Question 4) in Part II of the survey. The remaining 74 people who choose one of the other two answers were then asked a follow-up question (Question 3). Of these 74 people, 61 of them (26%) answered that they give higher priority to state-listed species in terms of their next actions. The other 13 people (5%) picked the “Other” answer.
Figure 9. Responses to Question 2.

Question 2 - NYNHP provides information about rare plants and animals that are “state-listed” (threatened, endangered, or special concern), as well as other rare species and significant natural communities that are not designated as “state-listed.” After receiving a report from the NYNHP, how does the presence of “state-listed” species influence your subsequent actions (such as contacting the NY State Department of Environmental Conservation (DEC), doing fieldwork, or altering the project)? (n=235)
- 2A - Any records on the NYNHP report are treated equally in terms of our next actions
- 2B - We give higher priority to “state-listed” species in terms of our next actions
- 2C - Other, please specify

The third and final question in Part I of the survey asked if the survey taker gives higher priority to state-listed plants, state-listed animals, or the same priority to both. As mentioned above, this was a follow-up question to Question 2 (if they picked higher priority to state-listed species or the “Other” answer). Of the 74 people who picked one of those two answers in Question 2, 73 of them answered this question. The overwhelming majority (62 people, 85%) said they give the same priority to both (Figure 10). Eight (11%) said they give higher priority to state-listed animals. None said they give higher priority to state-listed plants. Three others (4%) picked “Other”.

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Figure 10. Responses to Question 3.

Question 3 - Do you give higher priority to “state-listed” plants, “state-listed” animals, or the same priority to both? (n=73)

3A - Higher priority to “state-listed” plants
3B - Higher priority to “state-listed” animals
3C - Same priority to both
3D - Other, please specify

Fieldwork

Question 7 asked the survey taker if fieldwork was conducted for their project to look for rare species and/or significant natural communities after receiving initial information from the NYNHP. If they said yes they were then asked who conducted the fieldwork (Question 8). If they said no, they were then directed to Question 9. Of the 229 people that answered Question 7, 98 said yes (43%) and 131 said no (57%; Figure 11).
Question 7 - Was fieldwork conducted for this specific project/site to look for rare species and/or significant natural communities after receiving initial information from the NY Natural Heritage Program? (n=229)
7A - Yes
7B - No

Question 8 asked who conducted the fieldwork, if fieldwork was conducted after receiving initial information from the NYNHP. The survey taker was allowed to choose multiple answers. Of the 98 people who answered the question, the majority (66 people, 67%) said they or someone from their company conducted the fieldwork (Figure 12). This was followed by 37 people (38%) who said an environmental consultant conducted the fieldwork, and 6 people (6%) who said someone from a DEC Regional Office conducted the fieldwork. The two least chosen answers were, someone from the DEC Central Office and someone from the US Fish & Wildlife Service conducted the fieldwork, each had 1 respondent (1%).
Question 8 - Who conducted the fieldwork? *(Check all that apply.)* *(n=98)*

- 8A - You personally or someone from your firm/company
- 8B - Environmental consultant (other than your firm, if your firm is an environmental consulting firm)
- 8C - Someone from the DEC - Central Office in Albany
- 8D - Someone from the DEC - Regional Office
- 8E - Someone from the US Fish & Wildlife Service
- 8F - Other, please specify

![Figure 12. Responses to Question 8.](image)

**Determination of No Impact**

Question 9 asked what determination was made about whether the project would impact rare species and/or significant natural communities, after receiving the initial response from the NYNHP. Of the 227 responses to this question, 154 (68%) said their project would not impact rare species or significant natural communities, while 12 of them (5%) said their project likely would impact rare species or significant natural communities (Figure 13). The other 61 people (27%) said their request was for general background information on a site, so no determination had yet been made. These 61 people were then skipped to Part III of the survey, since the rest of the questions in Part II would not pertain to them. The 154 people who said their project would not impact were
moved to Question 10 for a follow-up question, while the 12 people who said their project likely would impact were skipped to Question 11 (still in Part II of survey).

![Figure 13. Responses to Question 9.](image)

**Question 9 - After receiving the initial response from the NY Natural Heritage Program for this specific project/site, what determination was made about whether the project would impact rare species and/or significant natural communities? (Check one.) (n=227)**

- **9A - The project would not impact rare species or significant natural communities**
- **9B - The project likely would impact rare species or significant natural communities**
- **9C - Request was for general background information on a site, so no determination has been made yet**

Those who said their project would not impact rare species or significant natural communities were asked a follow-up question. Question 10 asked those 154 people, of which 153 answered, how the determination was made that their project would not impact rare species or significant natural communities. Respondents were allowed to choose multiple answers. Fifty-two percent (80 people) said fieldwork was conducted and their firm or a consultant determined that suitable habitat was not available or would not be impacted (Figure 14). Aside from people choosing “Other”, the next largest response was that 34 people (22%) said they assessed the site remotely and determined that suitable habitat was not available or would not be impacted. This was followed by 19 people (12%) who said they contacted a DEC Regional Office and the DEC made the
determination. That was then followed by 18 people (12%) who said they followed up with the NYNHP and the NYNHP concurred that their project would not impact rare species or significant natural communities. The lowest response (4 people, 3%) was for contacting the DEC Central Office and having them make the determination.

Figure 14. Responses to Question 10.

Question 10 - How was it determined that the project would not impact rare species or significant natural communities? (Check all that apply.) (n=153)
10A - Followed up with the NY Natural Heritage Program and they concurred it would not impact rare species and/or significant natural communities
10B - Contacted the DEC - Central Office in Albany and they made the determination
10C - Contacted the DEC - Regional Office and they made the determination
10D - Contacted the US Fish & Wildlife Service and they made the determination
10E - Fieldwork was conducted and my firm/consultant determined that suitable habitat was not available or would not be impacted
10F - Fieldwork was conducted and a permitting or government agency determined that suitable habitat was not available or would not be impacted
10G - Assessed the site remotely (e.g., aerial photography) and determined that suitable habitat was not available or would not be impacted
10H - Other, please specify

Additional Actions Taken

Question 11 asked the survey taker about additional actions, if any, that they took for their project regarding potential impacts to rare species and significant natural communities, after receiving initial information from the NYNHP. They were again allowed to choose multiple answers, and 168 people answered the question. The majority
(70 people, 42%) said their project moved forward without any modifications regarding potential impacts to rare species and/or significant natural communities (Figure 15). The second highest number of people (31 people, 18%) said their project is suspended or delayed at this time, so no action yet taken. Aside from people choosing “Other”, the third highest response was 27 people (16%) who picked “None”, meaning there were no additional actions taken. There were 16 people (10%), 15 people (9%), and five people (3%), that said their project was modified to avoid impacts, modified to minimize impacts, and mitigation work was performed as a result of impacts, respectively. There was only one person (1%) who said their project was dropped for reasons unrelated to rare species and/or significant natural communities. There was also only one respondent (1%) who said their project was dropped as a result of potential impacts to rare species and/or significant natural communities.
Figure 15. Responses to Question 11.

Question 11 - Based on the initial information you received from the NY Natural Heritage Program, which of these additional actions, if any, did you take on this specific project/site regarding potential impacts to rare species and/or significant natural communities? (Check all that apply.) (n=168)

1A - Project is suspended or delayed at this time, so no action yet taken
1B - Project was dropped for reasons unrelated to rare species and/or significant natural communities
1C - Project was dropped as a result of potential impacts to rare species and/or significant natural communities
1D - Project moved forward without any modifications regarding potential impacts to rare species and/or significant natural communities
1E - Project was modified to avoid impacts to rare species and/or significant natural communities
1F - Project was modified to minimize impacts to rare species and/or significant natural communities
1G - Mitigation work was performed as a result of impacts to rare species and/or significant natural communities from this project
1H - Other, please specify
1I - None

Along with producing a bar graph showing the frequency of answers to Question 11, I also grouped the answers, including the “Other” answers, into three categories and produced a second bar graph. For this graph I removed four answers because they fell into two categories and the categories were meant to be mutually exclusive (people were originally allowed to choose multiple answers to Question 11). This resulted in 164 responses being used instead of the 168 that originally answered the question. The first category was “project was suspended or dropped for reasons unrelated to rare species and/or significant natural communities,” 31 responses (19%) fell into this category (Figure 16). I included in this category any response that the project is suspended at this
time or that the project was dropped for reasons unrelated to rare species and/or significant natural communities. The second category had the highest number of responses, 108 (66%). That category was “project moved forward without any modifications regarding potential impacts to rare species and/or significant natural communities,” or the answer “None” was chosen. The third category “project was dropped, modified, or mitigated as a result of potential impacts to rare species and/or significant natural communities” received 25 responses (15%). Included in this category was anyone who said that their project was dropped as a result of potential impacts to rare species and/or significant natural communities; their project was modified to avoid impacts; their project was modified to minimize impacts; and/or their project was mitigated. Each respondent only counted once when grouping answers. For example, if someone picked “modified to minimize impacts” as well as “mitigated,” they were counted in the third category, only once.
Question 11 - Based on the initial information you received from the NY Natural Heritage Program, which of these additional actions, if any, did you take on this specific project/site regarding potential impacts to rare species and/or significant natural communities? (Check all that apply.) (n=164)

11A - Project was suspended or dropped for reasons unrelated to rare species and/or significant natural communities
11B - Project moved forward without any modifications regarding potential impacts to rare species and/or significant natural communities, or the answer “none” was chosen
11C - Project was dropped, modified, or mitigated as a result of potential impacts to rare species and/or significant natural communities

I also produced a third bar graph for Question 11 by using the same categories I used above for Figure 16, but here I filtered the responses to only include those that said “project likely would impact rare species or significant natural communities” to Question 9. Twelve people answered Question 9 in this manner but one of them was removed from this bar graph because their answers to Question 11 fell into two different categories, and as above mentioned above, the categories were meant to be mutually exclusive. This left 11 responses, of which 4 people (36%) fell into the first category, 1 person (9%) in the second category, and 6 people (55%) in the third category (Figure 17).
Figure 17. Responses to Question 11, grouped the answers into categories, including the “Other” answers. Also, responses are filtered to only include those that said “likely would impact” to Question 9.

Question 11 - Based on the initial information you received from the NY Natural Heritage Program, which of these additional actions, if any, did you take on this specific project/site regarding potential impacts to rare species and/or significant natural communities? *(Check all that apply.)* (n=11)

11A - Project was suspended or dropped for reasons unrelated to rare species and/or significant natural communities
11B - Project moved forward without any modifications regarding potential impacts to rare species and/or significant natural communities, or the answer “none” was chosen
11C - Project was dropped, modified, or mitigated as a result of potential impacts to rare species and/or significant natural communities

In addition to the bar graphs for Question 11, I also ran a Chi-square ($\chi^2$) test using the frequencies from the answer categories in Figure 16 and Figure 17. The filtered responses from Figure 17 were used as the observed frequencies, while the frequencies from Figure 16 were used to calculate expected frequencies (calculation shown in Appendix C). The Chi-square testing the hypothesis that the groups were different was statistically significant at the 0.5% level of probability ($\chi^2 = 15.14; \text{df} = 2; p = < 0.005$). The number of people (out of those who determined their project likely would impact rare species or significant natural communities) that dropped, modified, or mitigated their project as a result of potential impacts to rare species and/or significant natural communities is greater than would be expected on the basis of chance.
Question 12 asked the survey taker if modifications to their project or mitigation were required for approval, if the project was approved by a permitting or government agency. Of the 167 people that answered, 17 people (10%) said yes, 80 people (48%) said no, and the other 70 people (42%) said the question of not applicable (Figure 18).

![Figure 18. Responses to Question 12.](image)

**Question 12** - If this specific project was approved by a permitting or government agency, were modifications to this project or mitigation required for approval? (n=167)

- 12A - Yes
- 12B - No
- 12C - Not applicable

**Objective D. Determine how NYNHP can increase and/or improve the provision and use of its information in land-use decisions and hence biodiversity conservation in New York State.**

Questions 13-19 from Part III of the survey related to Objective D. As previously mentioned, all seven questions were based on a four-point, unipolar ordinal scale. The first four questions asked the survey taker about the helpfulness of possible changes the NYNHP could make when providing information about rare species and significant
natural communities. The last three questions asked about the survey taker’s willingness to do something.

Question 13 asked how helpful it would be if NYNHP provided the name of the DEC contact to discuss ramifications to rare species reported by the NYNHP for the survey taker’s projects. Of the 226 people who answered the question, the majority (144 people, 64%) said very helpful (Figure 19). This was followed by 53 people (23%) saying moderately helpful, 24 people (11%) saying slightly helpful, and only five people (2%) saying not at all helpful.

![Figure 19. Responses to Question 13.](image)

Question 13 - How helpful would it be to you if the NY Natural Heritage Program made each of the following changes when providing your company with information about rare species and significant natural communities? (Check one answer for each possible change.) Provide name of DEC contact to discuss ramifications to rare species reported by the NYNHP for your projects. (n=226)

- 13A - Not at All Helpful
- 13B - Slightly Helpful
- 13C - Moderately Helpful
- 13D - Very Helpful

Question 14 asked about the helpfulness of NYNHP providing guidance about incorporating NYNHP information into NEPA, SEQRA, and CEQR. There were 223 respondents to this question. Again, the majority (105 people, 47%) said very helpful
(Figure 20). This was followed by 64 people (29%) saying moderately helpful, 43 (19%) saying slightly helpful, and 11 (5%) saying not at all helpful.

Question 14 - How helpful would it be to you if the NY Natural Heritage Program made each of the following changes when providing your company with information about rare species and significant natural communities? (Check one answer for each possible change.) Provide guidance about incorporating NYNHP information into NEPA, SEQRA, and CEQR. (n=223)

14A - Not at All Helpful
14B - Slightly Helpful
14C - Moderately Helpful
14D - Very Helpful

![Figure 20. Responses to Question 14.](chart)

Question 15 asked how helpful it would be if the NYNHP provided guidance about incorporating NYNHP information into an Environmental Assessment Form or Environmental Impact Statement. Of the 222 people that answered the question, 97 people (44%) said very helpful, 71 people (32%) said moderately helpful, 43 people (19%) said slightly helpful, and 11 people (5%) said not at all helpful (Figure 21).
Figure 21. Responses to Question 15.

Question 15 - How helpful would it be to you if the NY Natural Heritage Program made each of the following changes when providing your company with information about rare species and significant natural communities? *(Check one answer for each possible change.)* Provide guidance about incorporating NYNHP information into an Environmental Assessment Form or Environmental Impact Statement. (n=222)

- 15A - Not at All Helpful
- 15B - Slightly Helpful
- 15C - Moderately Helpful
- 15D - Very Helpful

The last of the questions regarding helpfulness was Question 16 which asked how helpful it would be if the NYNHP provided more information on species habitat and biology, and on significant natural communities. Of the 224 people that answered the question, the majority (122 people, 54%) said very helpful (Figure 22). This was followed by 69 people (31%) saying moderately helpful, 29 people (13%) saying slightly helpful, and only four people (2%) saying not at all helpful.
Figure 22. Responses to Question 16.

Question 16 - How helpful would it be to you if the NY Natural Heritage Program made each of the following changes when providing your company with information about rare species and significant natural communities? (Check one answer for each possible change.)

- Provide more information on species habitat and biology, and on significant natural communities. (n=224)
- 16A - Not at All Helpful
- 16B - Slightly Helpful
- 16C - Moderately Helpful
- 16D - Very Helpful

Question 17 asked how willing the survey taker would be to participate in an online workshop about accessing, interpreting, and applying NYNHP information to development projects. The answers of the 226 people that answered the question broke down as follows: 75 people (33%) said very willing, 78 people (34%) said moderately willing, 42 people (19%) said slightly willing, and 31 people (14%) said not at all willing (Figure 23).
Figure 23. Responses to Question 17.

Question 17 - How willing would you be to participate in an *online* workshop about accessing, interpreting, and applying NY Natural Heritage Program information to development projects? *(Check one only.)* \(n=226\)

- 17A - Not at All Willing
- 17B - Slightly Willing
- 17C - Moderately Willing
- 17D - Very Willing

Question 18 was similar to Question 17 but instead of asking about the survey taker’s willingness to participate in an online workshop, it asked about their willingness to participate in an in-person workshop. Again 226 people answered the question. The answers were as follows: 59 people (26%) said very willing, 68 people (30%) said moderately willing, 54 people (24%) said slightly willing, and 45 people (20%) said not at all willing (Figure 24).
Figure 24. Responses to Question 18.

Question 18 - How willing would you be to participate in an *in-person* workshop about accessing, interpreting, and applying NY Natural Heritage Program information to development projects? *(Check one only.)* *(n=226)*

- 18A - Not at All Willing
- 18B - Slightly Willing
- 18C - Moderately Willing
- 18D - Very Willing

The final survey question (Question 19) asked how willing the survey taker would be to electronically submit information requests and receive responses from the NYNHP, if a process were put in place. Of the 226 people that answered the question, the overwhelming majority (189 people, 84%) said very willing (Figure 25). This was followed by 28 people (12%) saying moderately willing, 6 people (3%) saying slightly willing, and 3 people (1%) saying not at all willing.
Question 19 - If a process were put in place, how willing would you be to electronically submit information requests and receive responses from the NY Natural Heritage Program? *(Check one only.)*

\(n=226\)

- 19A - Not at All Willing
- 19B - Slightly Willing
- 19C - Moderately Willing
- 19D - Very Willing

**Discussion**

There were four main objectives to this survey, with an overall goal of determining if NYNHP information positively affects land-use decision making in New York State and therefore enhances biodiversity conservation in the state.

**Objective A. Determine the reason the requestor contacted the NYNHP.**

Question 1 from Part I of the survey, and Questions 4 and 5 from Part II of the survey, were directed at determining the reasons requestors contacted the NYNHP.

It is clear from all three questions that the predominant reason requestors contact the NYNHP is to comply with regulatory procedures. If these regulatory procedures were not in place, it is possible people would be less likely to contact the NYNHP. It is
therefore, advantageous for biodiversity conservation that these regulatory procedures are in place.

Seventy percent of people who responded to Question 1 said they contact the NYNHP when they have a new project in order to ensure compliance with an environmental review process such as NEPA or SEQRA. On the same question, 50% responded that they contact the NYNHP if formal documents (e.g., Environmental Assessment Form, Environmental Impact Statement) will be prepared. Forty-eight percent also responded that they contact the NYNHP if a permit or approval will be needed. These are all part of regulatory procedures. (It should be noted that respondents were allowed to pick multiple answers, therefore, the percentages add to more than 100%.)

Question 4 showed again that regulations are the likely reason that people contact the NYNHP, with 34% of respondents saying they knew to contact the NYNHP for their project due to a requirement (e.g., SEQRA, NEPA, permit, town requirement, etc.). This was the second highest response to Question 4. The highest response, 51%, said they knew to contact the NYNHP because it is standard procedure at their company to contact the NYNHP. It may be that it is standard procedure because they need to meet some regulatory requirement(s). Either way, it is evident that more than 50% of respondents said it is standard procedure to contact the NYNHP.

The possible responses to Question 5 focused primarily on regulatory procedures, however, it is notable that when asked why they contacted the NYNHP for their project, the majority of respondents, 67%, said to comply with SEQRA. Forty-three percent did say they contacted the NYNHP to obtain general background information on a site. While
this response is not directly related to regulatory procedures, it is positive because they may be planning ahead to determine if their site will negatively impact rare species and/or significant natural communities. They may also be planning ahead in case their project moves forward and needs to comply with regulatory procedures.

**Objective B. Determine which entities were contacted regarding information on rare species and significant natural communities.**

Question 6 from Part II of the survey was aimed at determining which entities were contacted regarding information on rare species and significant natural communities.

Figure 7 shows the responses to Question 6 and the number of respondents that either said they did not contact any other entities for additional assistance or clarification after receiving initial information from the NYNHP, or they did contact other entities and which entities they contacted. Respondents were also allowed to pick “Other” and write in a response. At first glance it appears most respondents (84 people, 37%) said they did not contact other entities, but once the answers including the “Other” answers were grouped into two categories of “did not contact other entities” and “contacted other entities” it became clear more people contacted other entities than did not. Figure 8 shows that 59% of respondents (132 people) contacted other entities for additional assistance or clarification after receiving initial information from the NYNHP. This is in contrast to the 41% of respondents (92 people) who said they did not contact other entities. The Chi-square for these figures shows this to be a statistically significant difference. Therefore, the number of people who re-contacted the NYNHP or contacted other entities for additional assistance or clarification after receiving initial information
from the NYNHP is greater than would be expected on the basis of chance. In reviewing Figure 7, it can be seen that most of the people who contacted other entities contacted the US Fish & Wildlife Service followed closely by a DEC Regional Office.

These findings are similar to the Pennsylvania Natural Heritage Program (PNHP) survey findings discussed earlier. The PNHP also found that a number of their respondents worked with agencies and/or experts when it came to issues with planning efforts (Tracey 2011c).

**Objective C. Determine if and how NYNHP information is used to affect land-use decisions in New York State.**

Questions 2 and 3 from Part I of the survey, and Questions 7-12 from Part II of the survey, were directed at determining if and how NYNHP information is used to affect land-use decisions in New York State.

**State-Listed Versus Unlisted**

Figure 9 (Question 2) demonstrates that the majority of respondents (69%) treat all NYNHP records (state-listed species, rare species, and significant natural communities) equally in terms of their next actions, such as contacting the DEC, doing fieldwork, or altering a project. This is the ideal situation for biodiversity conservation. Of those that do give higher priority to the state-listed species, the vast majority (85%) give the same priority to state-listed plants as they do to state-listed animals (Question 3). This also bodes well for biodiversity conservation. It is notable though that no respondent gave higher priority to the state-listed plants over the state-listed animals, whereas 11% gave higher priority to state-listed animals over the state-listed plants. This could possibly be explained by the fact that New York State is not as stringent with protecting plants as
it is with protecting animals. For example, New York State has regulations under
Environmental Conservation Law § 11-0535 for incidental take permits for state-listed
fish and wildlife species (DEC 2011a). However, there are no incidental take permits
required for state-listed plants. It is, however, against the law (Environmental
Conservation Law §9-1503) to collect or destroy state-listed plants without the
landowner’s permission (DEC 2011b). But if the landowner would allow it, a state-listed
plant could be collected or destroyed, therefore, giving it less protection than a state-
listed animal. While New York State laws protecting state-listed plants may not be as
strict as those protecting state-listed animals, SEQRA, NEPA, and CEQR all afford
protection to state-listed plants as well as unlisted species and significant natural
communities. All rare species and significant natural communities are supposed to be
taken into account under SEQRA, NEPA, and CEQR and where possible negative
impacts to them should be avoided, minimized, and/or mitigated. This could explain why
most requestors treat all NYNHP records equally and of those who give higher priority to
state-listed species, most give the same priority to plants and animals. In addition, as
discussed in Objective A above, most requestors contact the NYNHP to comply with
regulatory procedures such as SEQRA, NEPA, and CEQR.

Fieldwork

Questions 7 and 8 focused on follow-up fieldwork. Question 7 asked if fieldwork
was conducted to look for rare species and/or significant natural communities after
receiving initial information from the NYNHP, and Question 8 asked who conducted the
fieldwork. The answers were fairly split with 57% saying no fieldwork was conducted
after receiving initial information, while 43% said fieldwork was conducted. While we
recommend that people conduct fieldwork to check for rare species and/or significant natural communities we do not have the regulatory authority to require it. Ideally, more people than not would conduct follow-up fieldwork. However, fieldwork is not always necessary after receiving NYNHP information, especially in cases where the requestor believes that their project will not impact any of the rare species or significant natural communities reported to them. They may believe this for several reasons, such as:

- fieldwork was conducted prior to contacting the NYNHP;
- the site was evaluated remotely using aerial photography and a determination made that suitable habitat was not going to be impacted;
- or it was determined that the rare species and/or significant natural communities reported to them were far enough away from the project site that they would not be negatively affected by offsite impacts such as storm water.

Of the respondents who indicated that fieldwork was conducted after initial receipt of NYNHP information, the majority (67%) said they or someone from their company conducted the fieldwork. This is to be expected as the majority of development project requests come from environmental consulting firms that possess the expertise on staff to conduct such fieldwork. The next greatest response (38%) was for an environmental consultant (other than their firm, if their firm is an environmental consulting firm) to have conducted the fieldwork. Again, environmental consulting firms have the expertise on staff to conduct fieldwork. After this the percentages drop sharply with only 6% of respondents saying someone from a DEC Regional Office conducted the fieldwork, and only 1% each saying someone from the DEC Central Office or from the US Fish & Wildlife Service conducted the fieldwork. This demonstrates how much the DEC, US Fish & Wildlife Service, and/or any agency or municipality acting as lead
agency or reviewing environmental documents (e.g., Environmental Assessment Forms, Environmental Impact Statements) has to rely on the fieldwork conducted by environmental consulting firms.

As a side note, 26 of the 131 people that said fieldwork was not conducted after receiving initial information from the NYNHP (Question 7) went on to say that their project would not impact rare species or significant natural communities (Question 9) and that the “no impact” determination was made because fieldwork was conducted (Question 10). While these answers seem to be contradictory, their responses to these questions were included in the data analysis. It is entirely possible that fieldwork was conducted prior to contacting the NYNHP. Question 7 was only asking about fieldwork conducted after receiving initial information from the NYNHP, while Question 10 did not specify a timeframe for the fieldwork being conducted, just whether or not it was conducted.

**Determination of No Impact**

As demonstrated by Figure 13 (Question 9), the majority of respondents (68%) determined that their project would not impact rare species or significant natural communities after receiving initial information from the NYNHP. Only 5% of respondents suggested that their projects would be likely to impact rare species or significant natural communities, while the other 27% contacted the NYNHP for general background information on a site and had not made such a determination yet. Of those that said their project would not impact rare species or significant natural communities, more than half (52%) said fieldwork was conducted and their firm/consultant made the determination (Figure 14, Question 10). This again shows the importance of reliance on
fieldwork conducted by environmental consultants, and that their actions are being taken based upon information received from the NYNHP. It also shows that while Question 7 showed a split between fieldwork being conducted and not, fieldwork is indeed being used as a tool to determine if a project will impact rare species and/or significant natural communities. After fieldwork, the next highest response (22%) for determining that a project would not impact rare species or significant natural communities was that the site was assessed remotely and it was determined that suitable habitat was not available or would not be impacted. This is consistent with one of the reasons listed above as to why more people than not said fieldwork was not conducted to Question 7. At lower percentages (ranging from 3%-12%) but still of importance, the following answers were given as to how the determination was made that a project would not impact rare species or significant natural communities: 1) followed up with the NYNHP and they concurred that the project would not have an impact; 2) contacted the DEC Central Office, a DEC Regional Office, or the US Fish & Wildlife Service and they made the determination; and/or 3) fieldwork was conducted and a permitting or government agency made the determination. All of these responses show that the requestors followed up with an appropriate agency staff to make a “no impact” determination. There were also 38 respondents who chose the “Other” answer for Question 10 and wrote in a response. Many of the responses stated they contacted or sent reports/documentation to the DEC, US Fish & Wildlife Service, or lead agency and the agencies either concurred or determined the project would not impact rare species or significant natural communities. Other write in responses stated that the project sites were either already disturbed sites (e.g., parking lots, lawns, or already developed sites) or were far enough away to not have
impacts on the rare species and/or significant natural communities reported to them. Again, this shows that people may be taking appropriate actions to make a determination of no impact, even if they are making such a determination themselves.

As a side note, 19 of the 154 respondents that said their project would not impact rare species or significant natural communities to Question 9, then indicated in Question 11 that their project was either dropped, modified, or mitigated regarding potential impacts to rare species or significant natural communities. While Question 9 was meant to be answered based on an initial determination of impact, and before any modifications to the project were made, some of these people may have answered the question in terms of the final outcome of their project. While their original answers were left in and used to create the figures for Questions 9 and 11, as well as the Chi-square calculation for Question 11, this does show that respondents used the NYNHP information and made changes to their project.

Additional Actions Taken

Figure 15 (Question 11) shows the number of respondents that took any of several possible additional actions on their project regarding potential impacts to rare species and/or significant natural communities. The highest percentage (42%) said their project moved forward without any modifications regarding potential impacts to rare species and/or significant natural communities. While this may seem like a high percentage, recall that 68% of people who responded to Question 9 believed that their project would not impact rare species or significant natural communities. When the answers to Question 11 were grouped into three categories as shown in Figure 16, it again shows the highest percentage (66%) being that the project moved forward without any modifications
regarding potential impacts to rare species and/or significant natural communities or the answer “none” was chosen (“none” meaning they did not take any additional actions). However, when considering only those who indicated their project likely would impact rare species and/or significant natural communities, most respondents (55%) indicated the project was dropped, modified, or mitigated as a result of potential impacts to rare species and/or significant natural communities (Figure 17). With this filtered set, only 9% (which was a single person) said the project moved forward without any modifications, even though potential impacts to rare species and/or significant natural communities were indicated. The Chi-square run using the numbers from Figure 16 and Figure 17 showed there to be a statistically significant difference. Therefore, the number of people (out of those who determined their project likely would impact rare species or significant natural communities) that dropped, modified, or mitigated their project as a result of potential impacts to rare species and/or significant natural communities is greater than would be expected on the basis of chance. This is an extremely positive finding for biodiversity conservation and shows that people modified their project if it was determined that the project likely would impact rare species and/or significant natural communities.

Figure 18 (Question 12) shows that only 10% of people stated that they were required to modify or mitigate their project in order to get approval for the project, if their project was to be approved by a permitting or government agency, while 48% said they were not required to do so. The other 42% said the question was not applicable. This seems to be a small percentage of projects requiring modification or mitigation, however, as seen in Question 9 the majority of projects were determined to not impact rare species and/or significant natural communities. It is also possible that the projects that likely
would impact rare species and/or significant natural communities were already modified to avoid or minimize impacts before seeking agency approval; therefore, the agency did not need to require additional modifications. Lastly, there is the possibility that the approving agency did not focus on rare species and/or significant natural communities as much as it could or should have. It should be noted, of the six people who answered Question 9 by saying their project likely would impact rare species and/or significant natural communities and also answered Question 11 by saying their project was dropped, modified, or mitigated as a result of potential impacts to rare species and/or significant natural communities (Figure 17), that two of them said yes, their project required modification or mitigation in order to get approval (Question 12), and the other four said the question was not applicable. However, none of the six said modification or mitigation was not required in order to get approval. This is also positive for biodiversity conservation as it shows projects that likely would impact rare species and/or significant natural communities were modified or mitigated when required to do so.

As a side note, four of the 17 people who answered Question 12 by saying modifications or mitigation were required, also said their project would not impact rare species or significant natural communities (Question 9), and said their project moved forward without any modifications regarding potential impacts to rare species or significant natural communities (Question 11). It is possible that they misread/misinterpreted Question 12 or possible they were required to make other modifications to their project unrelated to rare species or significant natural communities. Their answers were however left in to produce Figure 18 because it cannot be determined if they misread or misinterpreted the question.
Objective D. Determine how NYNHP can increase and/or improve the provision and use of its information in land-use decisions and hence biodiversity conservation in New York State.

Questions 13-19 from Part III of the survey, were aimed at determining how the NYNHP can increase and/or improve the provision and use of its information in land-use decisions and hence biodiversity conservation in New York State.

It is evident from Questions 13-16 that the NYNHP can make a few changes when providing information about rare species and significant natural communities that requestors would find helpful. The two biggest changes, based on the fact that more than 50% of respondents to each question said these would be “very helpful,” are to: 1) provide the name of a DEC contact to discuss ramifications to rare species reported by the NYNHP for their projects; and 2) provide more information on species habitat and biology, and on significant natural communities. Although fewer than 50% of respondents said each of these next two changes would be “very helpful,” when combined, more than 70% answered that each change would be “very helpful” or “moderately helpful.” These changes are to: 1) provide guidance about incorporating NYNHP information into NEPA, SEQRA, and CEQRA; and 2) provide guidance about incorporating NYNHP information into an Environmental Assessment Form or Environmental Impact Statement. These four changes could be implemented by:

- Providing the name of the DEC contact(s) or including a link in the NYNHP response letters to the appropriate page on the DEC website containing the DEC contacts in each Region.
• Creating a brochure to provide guidance about incorporating NYNHP information into NEPA, SEQRA, CEQRA, Environmental Assessment Forms, and Environmental Impact Statements. This brochure could be included with NYNHP responses, as well as posted on its website.

• Incorporating information about the NYNHP Guides into response letters, along with a link to them. Currently the NYNHP Guides are only referenced in the footer of NYNHP reports that are provided to requestors. The NYNHP Guides provide information on rare species and significant natural communities such as biology, habitat, identification, distribution, conservation, and management.

• Producing additional NYNHP Guides for those species and/or significant natural communities that do not currently have Guides.

Questions 17 and 18 asked about the survey takers willingness to participate in an online or in-person workshop about assessing, interpreting, and applying NYNHP information to development projects. The answers for the in-person workshop were relatively split across the board from “Not at All Willing” to “Very Willing.” The answers for the online workshop were more split toward “Moderately Willing” and “Very Willing.” The median answer in both cases was “Moderately Willing.” Based on these answers, it would appear that the most time and cost effective way to conduct a workshop would be to use technology such as WebEx. A workshop could be hosted live online and could also be recorded for others to use later if they were unable to participate in the original workshop.

The responses to Questions 13-18 are similar to those found by Azerrad and Nilon (2006), as discussed in the background section. They too found their survey respondents
would like workshops and additional assistance to help them incorporate biodiversity information into their work. These results are also consistent with the PNHP survey in which they found over 60% of respondents said it would be very useful to have more in-depth planning information, and over 50% said it would be very useful to have more outreach during and after projects (Tracey 2011c).

Perhaps the biggest improvement the NYNHP could make regarding information requests is in how it receives requests and delivers information (Question 19). An overwhelming majority of respondents (84%) said they would be "Very Willing" to electronically submit information requests and receive responses. Given today’s technology and people’s access to computers, this response is not surprising. The current method is for requestors to mail or fax hard copies of their requests. At the most basic level, the NYNHP could set up a process for submitting requests and receiving information by e-mail. Taking it a step further, an online program/website could be developed to allow for the submission of requests and receipt of information. While there would be costs involved with developing an online program, it would be more organized and time efficient once up and running than trying to handle multiple e-mail requests per day. For those not able to, or prefer not to submit requests electronically, hard copies of requests would still be accepted.

The responses to Question 19 were similar to the PNHP survey in which over 70% of their respondents said it would be very useful to have internet based mapping and report content (Tracey 2011c). Also, as mentioned in the background section, Tracey (2011a) concluded that providing information through a web-based GIS would help to
improve the use of Heritage data by planners and others responsible for land-use decision making.

An online program could also address an issue raised in the introduction, that there is little to no follow-up conducted by the NYNHP once we provide information. An online program could act as a two-way street. The NYNHP could provide information to requests regarding potential impacts to rare species and significant natural communities and the requestor could also use the program to provide feedback as to how they used the information. This online program could be set up to be unique to the NYNHP or it could be expanded for use by the DEC, or even possibly other state agencies or local governments that need to fund, approve, or undertake a project. The Environmental Resource Mapper and NY Nature Explorer already exist on the DEC website, but they function more to provide a first level look at what environmental resources might be impacted by a project. In the case of rare species, these online resources have generalized location information because of the sensitive nature of the data and the fact that anyone can access it. This new program could be a centralized database for statewide environmental review, essentially creating a one stop shop. Project applicants or their consultants could be given unique usernames and passwords to gain access to the program. There they could submit their project for environmental review and the appropriate staff within the agency(s) would be alerted and would respond. For example, the NYNHP would be alerted so they could screen the proposal for potential impacts to rare species and significant natural communities, while the DEC Permits staff could review the proposal for impacts to regulated wetlands. Individual agency staff could then post their comments and the project applicant or consultant would receive an alert letting
them know the information is ready for download. The project applicant or consultant could also use this program to submit their Environmental Assessment Forms (EAF) and/or Environmental Impact Statements (EIS) for review and approval, as well as to obtain any necessary permits. This centralized project review-response system would also improve consistency across the DEC Regions in terms of how projects are screened for potential impacts to rare species and significant natural communities. Currently a requestor can send a project review request to the NYNHP or to a DEC Regional Office, in which case different procedures (e.g., distance from project) may be used to conduct the screening and there can be differences in what is reported back to the requestor. With a centralized system as described, all project screenings for potential impacts to rare species and significant natural communities statewide would be handled electronically through a central location.

This online program could also be used to alert wildlife staff within the DEC as to which projects the NYNHP reported potential impacts to rare species. Currently, the NYNHP saves documents, in Portable Document Format (PDF), for all projects screened on a server DEC wildlife staff can access. The PDFs include the request letter and NYNHP response letter, along with any reports or maps provided, for each project. The NYNHP also provides the DEC with a bi-weekly report summarizing the projects screened. It is then up to the DEC staff to pull the PDFs of the individual projects they want to review further. This new project review-response system would simplify the process of searching through PDFs by automatically alerting the appropriate DEC staff, and they could more easily follow particular projects through the environmental review process and require that any impacts to rare species be avoided, minimized, or mitigated.
to the greatest extent possible. This could help reduce the possibility of a project having an impact on rare species, yet the project moving forward without any modifications as was indicated by one of the survey respondents. That respondent answered Question 9 by saying their project likely would impact rare species or significant natural communities, and then on Question 11, said their project moved forward without any modifications regarding those impacts (Figure 17).

Environmental advocates or even the general public concerned about a particular project may also benefit from this proposed system and be given access to it so they could review EIS’s and submit their comments during the public comment period. Public access to information about rare species may still need to be generalized, however, due to the sensitive nature of the data, but could be made sufficient enough for citizens to make informed comments on proposed projects. Theobald et al. (2000) worked with local stakeholders (e.g., developers, planners, politicians, land owners, environmental activists) to design and build an online information system to support land-use decision making and conservation. They found that both developers and environmental advocates wanted site specific information about potential impacts to wildlife and natural communities from development projects. The developer wanted the information up-front, before they invested a lot of time and money in a project, while environmental advocates wanted the information so they could make informed comments regarding a project and its impacts. By providing this information early in the planning process problems were addressed sooner and the planning process became more certain.
Does NYNHP information positively affect land-use decision making in New York State and therefore enhance biodiversity conservation in the state?

The simple answer is yes, NYNHP information affects land-use decisions in New York State. It also appears from the answers to this survey that requestors are taking actions that could enhance biodiversity conservation in the state. It is clear from Objective A that requestors are contacting the NYNHP to comply with regulatory procedures. Objective B shows that requestors are contacting other entities for additional assistance or clarification after receiving initial information from the NYNHP. They are mostly contacting the US Fish & Wildlife Service followed by DEC Regional Offices. Complying with regulatory procedures and contacting other agencies for assistance are appropriate actions that could enhance biodiversity conservation.

Objective C also made clear that NYNHP information is used to affect land-use decisions, and that requestors are taking appropriate actions that could enhance biodiversity conservation. Most requestors treat all NYNHP records (state-listed species, rare species, and significant natural communities) equally in terms of their next actions. Of those that do give higher priority to state-listed species most of them give the same priority to state-listed plants as they do to state-listed animals. The requestors were split regarding whether or not fieldwork was conducted after receiving initial information from the NYNHP, but the majority of the fieldwork that was done was conducted by environmental consulting firms. While the majority of requestors said their project would not impact rare species or significant natural communities, after receiving initial information from the NYNHP, they did take appropriate actions to make that determination. The majority of them conducted fieldwork or had fieldwork conducted.
They also assessed the sites remotely, followed up with the NYNHP, and/or contacted the US Fish & Wildlife Service and/or DEC. Of those that determined their project likely would impact rare species and/or significant natural communities, a statistically significant number of them dropped, modified, or mitigated their project as a result of these potential impacts.

While not directly answering the question about NYNHP information affecting land-use decisions, the results from the PNHP survey indicating that nearly two-thirds of respondents (planners) used the PNHP County Inventory information when reviewing development projects also points to the fact that Heritage information is used to affect land-use decisions (Tracey 2011a; Tracey 2011c).

**Implications and Applications of Findings**

From this survey, it is clear that NYNHP information is used to affect development projects and that requestors are taking appropriate actions that could enhance biodiversity conservation in New York State. As mentioned in the discussion, there are still things that the NYNHP can do to increase and/or improve the use and provision of its information. Additional information could be provided regarding: DEC contacts; guidance about incorporating NYNHP information into the regulatory review process; species habitat and biology; and significant natural communities. Workshops about accessing, interpreting, and applying NYNHP information could also be provided. Lastly, requestors demonstrated a willingness to submit requests and receive responses electronically. This should be one of the first steps the NYNHP takes in terms of improving the use and provision of its information.
There are also future steps or actions that could be taken by the NYNHP to carry on the research that has been started with this survey, regarding the use of its information. First, this survey could be re-run using future information requests for development projects to compare the results of that survey to the results obtained here. A subsequent survey could ask additional questions to tease out some of the seemingly contradictory answers seen in this survey such as those having to do with fieldwork or projects being modified even though the requestor responded that their project would not impact rare species or significant natural communities. Questions could also be reworded to try to make it clearer what is being asked, again, in an attempt to remove contradictions. Second, this survey did not focus on those that use NYNHP information for conservation, management and/or planning projects. That group could be the focus of a separate survey regarding the use of NYNHP information, as they too make land-use decisions affecting biodiversity conservation in New York State. Since this group is often trying to be proactive in terms of biodiversity conservation, they would be an excellent group to evaluate. While some of the questions on a survey aimed at those conducting conservation, management and/or planning projects would be different from those asked of people involved in development projects, it may be possible to compare and contrast some of the survey results. A third group that could be the focus of a future survey on the use of NYNHP information includes the towns and cities in New York State. They often act as a lead agency under NEPA, SEQRA, and CEQR. It would be beneficial to determine if they know about NYNHP information and if so, how they apply it to their decisions when funding, approving, or undertaking a project.
Education and outreach on the use of NYNHP information could also be conducted with all three groups [1) those doing development projects; 2) those doing conservation, management and/or planning projects; and 3) towns and cities], thereby benefitting biodiversity conservation, provided funding for such a program could be secured. An education and outreach program would also be consistent with the suggestion made by Cort (1996) as a way to improve the use of Heritage information. Education and outreach would need to be ongoing as there is turnover within all three groups. This is especially true of the towns and cities, as new officials are regularly being elected or appointed. Much of the content for an education and outreach program could be determined from the results of surveys of each of these groups. Additional surveys could also be conducted once education and outreach has begun to evaluate the effectiveness of the program and make improvements to it as needed.
References


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Pennsylvania Natural Heritage Program. 2010. Use of conservation information in planning efforts survey.


Virginia Natural Heritage Program. 2010. Virginia Natural Heritage Program survey and results.

September 20, 2010

First & Last Name  
Company Name  
Street Address  
City, State Zip

Dear first and last name:

The New York State Department of Environmental Conservation (DEC) and associated New York Natural Heritage Program (NYNHP) want to provide the best possible information in the most useful format to those individuals and organizations requesting information about rare species or sensitive habitats in the state. To determine how we can improve our services, I am conducting a survey of individuals and organizations who have requested these types of data over the last year. In particular, because I am an Environmental Review Specialist for the NYNHP, my colleagues and I will be able to directly use insights gained through the survey to improve our interactions with people like you.

You were randomly selected from the pool of information requests we received between June 2009 and May 2010. In month and year we responded to a request from your office for NYNHP information regarding the following project:

**Project Type: Project Name**  
City/Town(s): list  
County(s): list

We reported:  
list species/communities

We would appreciate it if you would answer a short online survey (approximately 15 questions).  
To access the survey please go to: http://nynhp.survey.sgizmo.com/s3/  
When prompted enter access code: access code
Part I of the survey asks general questions about NYNHP information. Part II asks questions about the project listed above. Part III asks you to indicate how NYNHP can be more helpful.

Your responses to this survey are voluntary and will be kept confidential. The data collected from this survey will be aggregated for analysis and no individual names, company names, or project names will be divulged. There are no requirements regarding how you use the information provided to you by the NYNHP, therefore, there will be no ramifications to you, your company, or the project from the DEC or the NYNHP due to your answers.

If you have any questions or concerns regarding this survey please feel free to contact me at tmsalern@gw.dec.state.ny.us or at 518-402-8926.

Thank you for taking the time to complete this survey and for assisting the DEC and the NYNHP. I look forward to receiving your responses.

Sincerely,

Tara Salerno
Environmental Review Specialist
NY Natural Heritage Program
Appendix B: New York Natural Heritage Program Survey

New York Natural Heritage Program (NYNHP) Questionnaire

Part I – for this section, please answer these general questions about NYNHP information.

1. When you have a new project, what criteria do you use to decide whether to contact the NYNHP for information on rare species and significant natural communities? (Check all that apply.)
   ___ We have no special criteria we always contact the NYNHP (Go to Question 2.)
   ___ We contact the NYNHP if there will be any ground disturbance
   ___ We contact the NYNHP if the area to be disturbed has existing vegetation
   ___ We contact the NYNHP if there will be any impacts to a stream or waterbody
   ___ We contact the NYNHP if there will be any impacts to a wetland
   ___ We contact the NYNHP to ensure compliance with an environmental review process (e.g., National Environmental Policy Act (NEPA), or with NY State Environmental Quality Review Act (SEQRA)) requirements
   ___ We contact the NYNHP if formal documents (e.g., Environmental Assessment Form, Environmental Impact Statement) will be prepared
   ___ We contact the NYNHP if a permit (e.g., wetland permit) or approval (e.g., lead agency approval) will be needed
   ___ Other, please specify_____________________________________________

2. NYNHP provides information about rare plants and animals that are “state-listed” (threatened, endangered, or special concern), as well as other rare species and significant natural communities that are not designated as “state-listed.” After receiving a report from the NYNHP, how does the presence of “state-listed” species influence your subsequent actions (such as contacting the NY State Department of Environmental Conservation (DEC), doing fieldwork, or altering the project)?
   ___ Any records on the NYNHP report are treated equally in terms of our next actions (Go to Part II, Question 4.)
   ___ We give higher priority to “state-listed” species in terms of our next actions (Go to Question 3 below.)
   ___ Other, please specify (Go to Question 3 below.)________________________________

3. Do you give higher priority to “state-listed” plants, “state-listed” animals, or the same priority to both?
___ Higher priority to “state-listed” plants
___ Higher priority to “state-listed” animals
___ Same priority to both
___ Other, please specify_____________________________________________

Part II – for this section, please use the NY Natural Heritage Program response to the project listed on your survey invitation letter as the basis for your answers to these questions.

4. How did you know to contact the NY Natural Heritage Program regarding this specific project/site?

__________________________________________________________________

5. Why did you request information from the NY Natural Heritage Program regarding this specific project/site? (Check all that apply.)
   ___ To comply with the National Environmental Policy Act (NEPA)
   ___ To comply with the NY State Environmental Quality Review Act (SEQRA)
   ___ To comply with the NY City Environmental Quality Review (CEQR)
   ___ To comply with a Town or lead agency requirement
   ___ To prepare a Short Form Environmental Assessment Form (EAF)
   ___ To prepare a Long Form Environmental Assessment Form (EAF)
   ___ To prepare an Environmental Impact Statement (EIS) / Draft EIS
   ___ To obtain a federal permit
   ___ To obtain a state permit
   ___ To obtain Town or lead agency approval
   ___ To obtain general background information on a site
   ___ Other, please specify_____________________________________________

6. What entities did you contact for additional assistance or clarification after you received initial information from the NY Natural Heritage Program for this specific project/site? (Check all that apply.)
   ___ I contacted no other entities for assistance (Go to Question 7 below.)
   ___ I re-contacted the NY Natural Heritage Program for more information
   ___ DEC - Central Office in Albany (other than the NYNHP)
7. Was fieldwork conducted for this specific project/site to look for rare species and/or significant natural communities after receiving initial information from the NY Natural Heritage Program?

___ Yes ___ No

8. If yes, who conducted the fieldwork? (Check all that apply.)

___ You personally or someone from your firm/company
___ Environmental consultant (other than your firm, if your firm is an environmental consulting firm)
___ Someone from the DEC – Central Office in Albany
___ Someone from the DEC – Regional Office
___ Someone from the US Fish & Wildlife Service
___ Other, please specify__________________________

9. After receiving the initial response from the NY Natural Heritage Program for this specific project/site, what determination was made about whether the project would impact rare species and/or significant natural communities? (Check one only.)

___ The project would not impact rare species or significant natural communities (Go to Question 10 below.)
___ The project likely would impact rare species or significant natural communities (Go to Question 11 below.)
___ Request was for general background information on a site, so no determination has been made yet (Go to Part III, Question 13.)

10. How was it determined that the project would not impact rare species or significant natural communities? (Check all that apply.)

___ Followed up with the NY Natural Heritage Program and they concurred it would not impact rare species and/or significant natural communities
___ Contacted the DEC – Central Office in Albany and they made the determination
___ Contacted the DEC – Regional Office and they made the determination
___ Contacted the US Fish & Wildlife Service and they made the determination
___ Fieldwork was conducted and my firm/consultant determined that suitable habitat was not available or would not be impacted
Fieldwork was conducted and a permitting or government agency determined that suitable habitat was not available or would not be impacted

Assessed the site remotely (e.g., aerial photography) and determined that suitable habitat was not available or would not be impacted

Other, please specify_____________________________________________

11. Based on the initial information you received from the NY Natural Heritage Program, which of these additional actions, if any, did you take on this specific project/site regarding potential impacts to rare species and/or significant natural communities? (Check all that apply.)

Project is suspended or delayed at this time, so no action yet taken

Project was dropped for reasons unrelated to rare species and/or significant natural communities

Project was dropped as a result of potential impacts to rare species and/or significant natural communities

Project moved forward without any modifications regarding potential impacts to rare species and/or significant natural communities

Project was modified to avoid impacts to rare species and/or significant natural communities

Project was modified to minimize impacts to rare species and/or significant natural communities

Mitigation work was performed as a result of impacts to rare species and/or significant natural communities from this project

Other, please specify_____________________________________________

None

12. If this specific project was approved by a permitting or government agency, were modifications to this project or mitigation required for approval?

Yes

No

Not applicable

Part III – Improving the Process.

How helpful would it be to you if the NY Natural Heritage Program made each of the following changes when providing your company with information about rare species and significant natural communities? (Check one answer for each possible change.)
Possible change by the NY Natural Heritage Program…

<table>
<thead>
<tr>
<th>Possible change</th>
<th>Not at All Helpful</th>
<th>Slightly Helpful</th>
<th>Moderately Helpful</th>
<th>Very Helpful</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Provide name of DEC contact to discuss ramifications to rare species reported by the NYNHP for your projects.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. Provide guidance about incorporating NYNHP information into NEPA, SEQRA, and CEQR.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15. Provide guidance about incorporating NYNHP information into an Environmental Assessment Form or Environmental Impact Statement.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16. Provide more information on species habitat and biology, and on significant natural communities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

17. How willing would you be to participate in an online workshop about accessing, interpreting, and applying NY Natural Heritage Program information to development projects? (Check one only.)

___ Not at All Willing
___ Slightly Willing
___ Moderately Willing
___ Very Willing

18. How willing would you be to participate in an in-person workshop about accessing, interpreting, and applying NY Natural Heritage Program information to development projects? (Check one only.)

___ Not at All Willing
___ Slightly Willing
___ Moderately Willing
___ Very Willing

19. If a process were put in place, how willing would you be to electronically submit information requests and receive responses from the NY Natural Heritage Program? (Check one only.)

___ Not at All Willing
___ Slightly Willing
___ Moderately Willing
___ Very Willing

Thank you for taking the time to complete this survey and assisting the DEC and the NYNHP. Your responses have been submitted. Please feel free to use any of the following websites for additional information about rare species and significant natural communities:

- NY Natural Heritage Program’s Guides at [www.guides.nynhp.org](http://www.guides.nynhp.org)
- Environmental Resource Mapper at [www.dec.ny.gov/imsmaps/ERM/viewer.htm](http://www.dec.ny.gov/imsmaps/ERM/viewer.htm)
- NatureServe Explorer at [www.natureserve.org/explorer/](http://www.natureserve.org/explorer/)
• United States Department of Agriculture’s (USDA) Plants Database at www.plants.usda.gov/index.html
• New York Flora Atlas at www.newyork.plantatlas.usf.edu
• Ecological Communities of New York State at www.dec.ny.gov/animals/29384.html
Appendix C: Calculations

Question 6 - What entities did you contact for additional assistance or clarification after you received initial information from the NY Natural Heritage Program for this specific project/site?

(Grouped the answers into categories, including the “Other” answers. 229 people answered the question but five were removed because they only answered that their project was on hold or canceled. 229-5=224)

<table>
<thead>
<tr>
<th></th>
<th>Observed</th>
<th>Expected (random, 50% &amp; 50%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacted no other entities for</td>
<td>92</td>
<td>112</td>
</tr>
<tr>
<td>assistance or clarification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contacted other entities for</td>
<td>132</td>
<td>112</td>
</tr>
<tr>
<td>assistance or clarification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>total</td>
<td>224</td>
<td>224</td>
</tr>
</tbody>
</table>

\[ \chi^2 = \sum \left[ \frac{(fo - fe)^2}{fe} \right] \]

\[ \chi^2 = \frac{(92-112)^2}{112} + \frac{(132-112)^2}{112} \]

\[ \chi^2 = \frac{(-20)^2}{112} + \frac{(20)^2}{112} \]

\[ \chi^2 = \frac{400}{112} + \frac{400}{112} \]

\[ \chi^2 = 3.57 + 3.57 \]

\[ \chi^2 = 7.14 \]  

tabled critical \( \chi^2 \) for \( \alpha = 0.01 \) is 6.63

\[ \chi^2 = 7.14; \text{ df } = 1; p = < 0.01 \]
Question 11 - Based on the initial information you received from the NY Natural Heritage Program, which of these additional actions, if any, did you take on this specific project/site regarding potential impacts to rare species and/or significant natural communities?

(Grouped the answers into categories, including the “Other” answers. Also, filtered responses to only include those that said “likely would impact” to Question 9. The filtered responses were used for observed frequencies. Expected frequencies were calculated by using all answers to Question 11. 168 people answered Question 11 but four were removed because their answers fell into two categories. One of those people also answered “likely would impact” to Question 9, therefore, their answer was also removed from the filtered data set. 168-4=164 and 12-1=11)

<table>
<thead>
<tr>
<th>All answers to Question 11</th>
<th>Filtered answers to Question 11 (expected)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspended/dropped</td>
<td>31/164 = 0.19</td>
</tr>
<tr>
<td>Didn’t modify</td>
<td>108/164 = 0.66</td>
</tr>
<tr>
<td>Modified</td>
<td>25/164 = 0.15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Observed</th>
<th>Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project was suspended or dropped for reasons unrelated to rare species and/or significant natural communities</td>
<td>4</td>
</tr>
<tr>
<td>Project moved forward without any modifications regarding potential impacts to rare species and/or significant natural communities, or the answer “none” was chosen</td>
<td>1</td>
</tr>
<tr>
<td>Project was dropped, modified, or mitigated as a result of potential impacts to rare species and/or significant natural communities</td>
<td>6</td>
</tr>
<tr>
<td>total</td>
<td>11</td>
</tr>
</tbody>
</table>

\[
\chi^2 = \sum \left( \frac{(f_o - f_e)^2}{f_e} \right)
\]

\[
\chi^2 = \frac{(4-2)^2}{2} + \frac{(1-7)^2}{7} + \frac{(6-2)^2}{2}
\]

\[
\chi^2 = \frac{(2)^2}{2} + \frac{(-6)^2}{7} + \frac{(4)^2}{2}
\]

\[
\chi^2 = \frac{4}{2} + \frac{36}{7} + \frac{16}{2}
\]

\[
\chi^2 = 2.00 + 5.14 + 8.00
\]

\[
\chi^2 = 15.14 \quad \text{tabled critical } \chi^2 \text{ for } \alpha = 0.005 \text{ is 10.60}
\]

\[
\chi^2 = 15.14; \text{ df } = 2; \ p = < 0.005
\]

80