Department of Environmental Conservation

Management of Invasive Species

Report 2019-S-26 | July 2020

OFFICE OF THE NEW YORK STATE COMPTROLLER
Thomas P. DiNapoli, State Comptroller
Division of State Government Accountability

Audit Highlights

Objective

To determine if the Department of Environmental Conservation (Department) was effectively managing invasive species to prevent and mitigate the harmful effects of invasive species populations in New York State. The audit covers the period April 1, 2017 through November 22, 2019.

About the Program

Many species of plants and animals currently found in New York State are not indigenous, but rather have been introduced by humans. Subsets of these species may cause habitat degradation, loss of native species, risks to public safety, human illness, or damage to crops and livestock and are deemed "invasive." Invasive species aggressively outcompete native species, adversely affecting the ecological integrity of the State's natural communities and systems. In New York, invasive species management is a collaborative effort between the Department and various other agencies and entities. However, as the State's environmental regulatory agency, oversight responsibilities generally rest with the Department. Invasive species are generally classified as aquatic invasive species (AIS) or terrestrial invasive species (TIS). AIS are commonly spread via fishing and boating activities. Boat stewards are volunteers or paid members of the community who provide the public with important information about precautions such as cleaning, drying, and draining watercraft to reduce the spread of AIS. The Department is authorized to enact AIS preventive measures, including public education (e.g., boat steward education/inspection program; warning signage at public boat launches) and is responsible for implementing and maintaining a statewide, coordinated management program, including a permit system to control activities (e.g., dredging, mining, construction) that could inadvertently spread AIS or TIS. The Department also performs assessments to categorize and quantify the "invasiveness" of non-native species and their social and economic implications. These assessments allow the Department to control the spread of non-native species through regulation. Further, the Department actively participates in early detection methods, such as trap checking and other forms of direct observation, to identify specific forest-related TIS.

Key Findings

While the Department has been active in establishing programs to address invasive species, improvements in its oversight, monitoring, and communication relating to boat inspections, permits, and early detection and assessment of invasive species could strengthen its ability to mitigate the spread of invasive species. For example:

- Boat stewards did not always engage boaters exiting and entering waterbodies to provide AIS and watercraft inspection training.
- Educational signage was not always posted or posted conspicuously, limiting its usefulness in educating the boating public about AIS and their role in preventing its spread.
- The Department does not consistently apply or monitor its permit system to control activities, such as mining, dredging, and construction, that can trigger invasive species spread and further impact the State's biological resources. Of those permits we sampled, 84 percent did not include provisions to mitigate the spread of invasive species even though the type of work being performed could be a source of spread.

- The Department also did not provide guidance on how to monitor provisions of permits that included invasive species management.
- We also found assessments of non-native species were not always completed or were missing information.

Key Recommendations

- Develop a process to, among other things, communicate duties and responsibilities to boat stewards and coordinate with other oversight entities to improve preventive efforts across public boat launches statewide, ensuring consistency and compliance with signage and other requirements.
- Develop and implement policies, procedures, or guidance on issuing permits and monitoring compliance relating to invasive species.

Office of the New York State Comptroller
Division of State Government Accountability

July 23, 2020

Mr. Basil Seggos
Commissioner
Department of Environmental Conservation
625 Broadway
Albany, NY 12233

Dear Commissioner Seggos:

The Office of the State Comptroller is committed to helping State agencies, public authorities, and local government agencies manage government resources efficiently and effectively. By so doing, it provides accountability for tax dollars spent to support government operations. The Comptroller oversees the fiscal affairs of State agencies, public authorities, and local government agencies, as well as their compliance with relevant statutes and their observance of good business practices. This fiscal oversight is accomplished, in part, through our audits, which identify opportunities for improving operations. Audits can also identify strategies for reducing costs and strengthening controls that are intended to safeguard assets.

Following is a report of our audit entitled *Management of Invasive Species*. This audit was performed pursuant to the State Comptroller's authority under Article V, Section 1 of the State Constitution and Article II, Section 8 of the State Finance Law.

This audit's results and recommendations are resources for you to use in effectively managing your operations and in meeting the expectations of taxpayers. If you have any questions about this report, please feel free to contact us.

Respectfully submitted,

Division of State Government Accountability

Contents

Glossary of Terms

Term	Description	Identifier
Ag and Markets	Department of Agriculture and Markets	*Agency*
AIS	Aquatic invasive species	*Key Term*
DART	Department Application Review Tracking system	*System*
Department	Department of Environmental Conservation	*Auditee*
EDDMapS	Early Detection and Distribution Mapping System	*System*
GIS	Geographic Information System	*Software*
Handbook	New York State Watercraft Inspection Steward Program Handbook	*Policy*
iMap	iMapInvasives, an invasive species tracking database	*Database*
Parks	Office of Parks, Recreation and Historic Preservation	*Agency*
Plan	New York State AIS Management Plan	*Key Term*
Council Report	"A Regulatory System for Non-Native Species," issued by the New York Invasive Species Council	*Guidance*
TIS	Terrestrial invasive species	*Key Term*
WISPA	Watercraft Inspection Steward Program Application	*Key Term*

Background

Many species of plants and animals currently found in New York are not indigenous, but rather have been introduced, intentionally or unintentionally, by humans. While some are harmless or even beneficial, others are menacing. Subsets of these species are deemed “invasive.” Invasive species aggressively outcompete native species, adversely affecting the ecological integrity of the State’s fresh and tidal wetlands, waterbodies and waterways, forests, agricultural lands, meadows, grasslands, and other natural communities and systems. The health, economic, and quality-of-life consequences can be enormous: shrinking wildlife habitat; loss of native fish, wildlife, and tree species; diseased crops; contamination of water resources; diminished recreational opportunities; and the cost to the State for its management efforts.

In New York State, invasive species management is a collaborative effort among the Department of Environmental Conservation (Department); Department of Agriculture and Markets (Ag and Markets); Office of Parks, Recreation and Historic Preservation (Parks); and various other agencies and entities. However, as the State’s environmental regulatory agency, oversight responsibilities to protect, improve, and conserve New York’s natural resources generally rest with the Department.

Invasive species are generally classified as aquatic invasive species (AIS) or terrestrial invasive species (TIS) and can be plants or animals (including insects). To meet its responsibilities, the Department has implemented a range of programs and processes to help control the spread of both AIS and TIS. In November 2018, the Department and Ag and Markets jointly published the New York State Invasive Species Comprehensive Management Plan, which highlights successful invasive species mitigation programs and provides guidance and structure for future efforts. The Department also actively participates in early detection methods, such as trap checking and other forms of direct observation, to identify specific forest-related TIS.

AIS are commonly spread via shipping activities and on fishing and boating gear and equipment, and are especially rampant in the Great Lakes, Lake Champlain, and Hudson River regions. The Department is responsible for overseeing preventive measures to protect against AIS, including creating and posting educational signage at public boat launches, and for implementing and maintaining a statewide, coordinated AIS management program.

The Department is required to develop universal, downloadable AIS prevention signage that directs the public to remove any visible mud, plants, fish, or animals and to eliminate water before transporting equipment (e.g., watercraft or trailers). The signage also states boaters should clean, drain, and dry anything that comes into contact with the water. Signage is required to be conspicuously displayed by site owners at all public boat launches. The Department is responsible for enforcing signage requirements at Department-owned boat launches and public launches within the Adirondack and Catskill Parks.

In July 2015, the Department released the updated New York State AIS Management Plan (Plan), which includes an expansion of boat launch steward programs for public and private boat launch sites and promotes consistency among them. Boat

stewards are volunteers or paid members of the community who provide the public with important information about precautions, such as cleaning, drying, and draining watercraft, to reduce the spread of AIS. Stewards also perform inspections of watercraft exiting and entering State waterbodies to detect whether they are carrying AIS. Stewards funded by the Department or Parks are required to follow the New York State Watercraft Inspection Steward Program Handbook (Handbook). According to the Handbook, boat stewards must:

- Visually check boats, trailers, and gear for "hitchhiking" organisms and debris;
- Demonstrate watercraft inspection to boaters to teach them how to conduct inspections on their own;
- Provide AIS spread prevention information to boaters; and
- Collect and record standardized data, which is submitted to a Department database.

The Department uses the Watercraft Inspection Steward Program Application (WISPA) to standardize data collection during boat steward interactions, including inspections, with boaters and anglers statewide. WISPA collects real-time data on invasive species (noted during the course of a watercraft inspection or other activities) from stewards at boat launches throughout the State. According to Department officials, WISPA allows them to analyze trends in boater preventive measures and AIS awareness; track movement of boats that could transport AIS; assess AIS risk for particular waterbodies; and expand knowledge regarding the locations of particular species.

According to the Plan, fishing is severely impacted by invasive species, particularly in the State canal and Hudson River systems where at least 154 non-native species cause an estimated $500 million in economic losses each year, 80 percent of which affects commercial and sport fishing. Controlling the spread of an established invasive species can be costly. For example, between April 2017 and September 2019, the Department spent nearly $1.8 million trying to control and stop the spread of Hydrilla (see Images 1 and 2) from the Croton River (Westchester County) to the Hudson River and its many tributaries. The Department earmarked $6.8 million to combat the spread of Hydrilla through December 2022.

As a pre-emptive management measure, the Department administers a permit system to control activities, such as dredging, mining, and construction, that have the potential to impact New York's biological resources by spreading

Images 1 and 2: Hydrilla or "water thyme" ***(Hydrilla verticillata)*** is an aquatic plant from Asia that is one of the most difficult aquatic invasive species to control and eradicate in the United States. The plant's aggressive growth (its 20- to 30-foot stems can grow up to an inch per day) forms thick mats that block sunlight to native plants and can block intakes at water treatment, power generating, and industrial facilities. Hydrilla can be carried by currents, boats, boat trailers, and fishing gear to new locations. These plants were observed in Suffolk County in August (left) and June (right) 2018.

AIS and TIS. However, not all such permits require measures for preventing the spread of invasive species. The Department uses its Department Application Review Tracking (DART) system to log and track the majority of, but not all, permits.

To further combat the spread of invasive species, the Department utilizes assessment tools to quantify the biological "invasiveness" and the social and economic issues, both positive and negative, posed by each non-native species. The Department uses the tools to help categorize non-native species with sufficient invasive characteristics into one of the following groups:

- Prohibited Species: Unlawful to possess, import, purchase, transport, or introduce except under a permit for disposal, control, research, or education.
- Regulated Species: Legal to possess, sell, buy, and transport, but should not be introduced into areas connected to public waters.

The main purpose of these assessments and groupings is to control the spread of non-native species in the State through the regulatory process. Between February 2008 and November 2019, 566 non-native species have been assessed by the Department, contractors, and Ag and Markets (beginning in 2012, the Department took the lead on performing all the assessments). Effective March 10, 2015, a list of 153 invasive species (125 prohibited and 28 regulated) was approved.

The Department uses a report issued by the New York Invasive Species Council – "A Regulatory System for Non-Native Species" (Council Report) – as guidance for its assessment process. (The Council is a statutory body created to coordinate efforts among State agencies and partners to address environmental and economic threats of invasive species.) The Council Report recommends a regulatory system for preventing importation and/or release of non-native animal and plant species, and describes three steps for assessing unlisted or new non-native species: identifying species for screening; prioritizing species for screening; and conducting a risk assessment.

The Council Report identifies specific criteria to use as the basis for identifying species for screening, including: species listed as invasive by a neighboring state or region, non-native species in State waters that have not been reviewed, and non-native species in nearby states or regions that have been problematic. Once a non-native species has been identified, the prioritization process may include consideration of the presence of the species in the State and the potential for significant negative ecological, economic, and human health impacts. Furthermore, reassessing species periodically is necessary because the information used to assess both invasiveness and socio-economic impact can change over time.

The Department also uses iMapInvasives (iMap), an online invasive species database and mapping tool, to document and share invasive species observation, survey, assessment, and treatment data. According to Department officials, iMap includes data on regulated invasive species as well as other non-native species that are not yet regulated.

Audit Findings and Recommendations

The Department has been active in establishing programs and tools, such as iMap and WISPA, to prevent and limit the spread of invasive species. For example, in 2017, the Department began using WISPA to collect and record standardized boat inspection and interaction data. The Department also implemented a five-year plan that includes expanding the boat steward program for public and private boat launch sites to ensure program consistency. Furthermore, there are decontamination stations in certain areas to help prevent the spread of invasive species. However, we found the Department could improve its oversight, monitoring, and communication in some areas for more effective management of invasive species.

We found boat stewards were not always engaging owners and operators of watercraft exiting and entering waterbodies, and educational signage at launch sites was not always present or was poorly located. We also found early detection efforts could be improved, and assessments of invasive species were not always completed or were missing information. In addition, the Department did not have policies and procedures for issuing and monitoring compliance with permits for work that has the potential to spread AIS or TIS, identifying conditions that could trigger assessments of non-native species, and completing periodic testing of trap samples for potentially invasive species. Policies and procedures in these areas would help bring direction and consistency to daily operations and facilitate long-term strategic planning.

Boat Stewards and Signage

The Department has taken measures to combat the spread of AIS on State waters, creating and posting required preventive signage and contracting or partnering with boat stewards to inspect boats entering and exiting public waters and educating the public on reducing the spread of AIS. According to Department records, stewards completed and recorded over 242,000 watercraft inspections in WISPA in 2019. However, we found several areas where the Department could improve its AIS spread prevention efforts to mitigate the risk of harm to the State's environment (e.g., destruction of native species) and economy as well as human health (e.g., through consumption of harmful AIS, such as non-native fish containing high levels of heavy metals).

Between January 2018 and June 2019, there were 837 public boat launches throughout the State, including: launches with hard surface ramps that allow for float off/on launching and retrieving for most trailered boats; trailer launches suited for small, light boats that may not be able to be launched or retrieved with a trailer due to shallow waters; and hand launches, where boats must be carried into the water. With the aid of Geographic Information System (GIS) software, we used boat launch and WISPA data to identify the presence of boat stewards and invasive species at boat launches (see Exhibit A). We found stewards were present at 194 of the 837 launch sites. Department officials stated they contract with stewards at 158 locations, and Parks, private lake associations, towns, and grantees contract with the remaining 36. Department officials state they assign stewards to boat launches based on factors such as the confirmed presence of AIS, volume of boat traffic, and opportunities presented by location (e.g., where a steward at a roadside or "gateway"

launch location could provide coverage for multiple adjacent waterbodies).

Based on our analysis of the watercraft launch and retrieval data in WISPA, we determined that, of the 194 boat launch sites where stewards were present, 42 were high-risk areas. That is, at these sites, stewards recorded invasive species, such as Eurasian Watermilfoil or Zebra mussels (see Image 3), on at least 25 percent of watercraft retrievals.

We conducted site visits at 30 of the 42 boat launches. Stewards under the Department's oversight were assigned to 14 of the sites; the others were overseen by Parks or other entities (12) or did not have stewards assigned during the 2019 boating season (4).

Image 3: Zebra mussel *(Dreissena polymorpha)* is an aquatic invertebrate originally from Russia. It can reduce native mussel and crayfish populations and produce toxins that can kill animals and harm humans. Zebra mussel infestations can also clog power plants and drinking water intakes, and their removal is costly to cities and power plants. These zebra mussels were observed in Oswego County in September 2018.

At the time of our visit, stewards were present at 11 of the 30 boat launches; 7 of the 11 sites fell under the Department's oversight. We found stewards were not inspecting all watercraft launched and/or retrieved at 5 of the 7 sites. In some instances, the location of the steward's inspection station did not allow a clear view of watercraft launching or exiting, likely limiting the stewards' ability to identify boats for inspection. In other instances, stewards did not approach boaters leaving the waterbody despite our observations that they were aware of the watercraft exiting. Additionally, we found one boat steward did not record all inspections performed in WISPA – information that is essential for addressing AIS across the State.

Stewards may benefit from increased communication and monitoring from the Department regarding their responsibilities, including inspecting watercraft and recording inspections in WISPA, to ensure duties are consistently being performed.

Additionally, we observed 140 watercraft launches and 178 retrievals at 23 of the 30 sites while boat stewards were not present. We observed that, for 52 percent of the watercraft retrieved, boat operators did not perform any preventive measures, and for another 45 percent, only limited preventive measures (e.g., limited cleaning) were performed before leaving the launch site (see Image 4). We also found instances of watercraft with visible debris entering the waterbody or leaving the boat launch site. The Department asserted that preventive measures can be performed at locations other than the boat launch where we made our observations, but cannot confirm this happened. However, measures taken just before entering or just after exiting would be the most effective in preventing the spread of invasive species.

Image 4: We observed watercraft owners not performing AIS spread prevention measures and others attempting to perform such measures but failing to remove all debris from their watercraft or trailer before leaving the site.

At 6 of the 23 launch sites where boat stewards were not present at the time of our visit, we found no signage posted. At 2 other sites, signage was not conspicuously displayed: at one, a barrier blocked the sign, and at the other, the sign was small and distant from the launch site. The lack of clearly displayed AIS spread prevention signage could be contributing to watercraft owners not taking reasonable precautions.

We visited 100 of the remaining 643 boat launch sites where no boat stewards were assigned to determine if appropriate AIS signage was displayed, and found no AIS spread prevention signage at 45. At another 8, the signage was not conspicuously displayed (see Image 5).

Image 5: Example of signage not conspicuously displayed.

According to the Department's boat launch data, there had been AIS sightings at 42 of the 53 sites where AIS signage was not conspicuously displayed or not present at all. Of the 53 sites, the Department was responsible for enforcing signage requirements at 10. Although the Department is not directly responsible for signage at the other locations, coordination with other oversight entities would improve preventive efforts across public boat launches statewide, ensuring more consistent signage.

Outreach and education are effective ways to combat the spread of AIS. The more people are made aware of the necessity of cleaning, drying, and draining boating and fishing equipment before using it elsewhere, the less likely AIS will be spread to new waters. The public may not be aware of their obligation or the dangers of spreading AIS if signage is not present or visible or if boat stewards do not consistently inspect watercraft and educate water recreationists.

Permitting

We found the Department could improve the process for issuing and monitoring environmental permits to mitigate the potential spread of AIS and TIS. Because DART does not specifically track whether environmental permits contain conditions for preventing the spread of invasive species, officials could not provide a complete population of all permits that contain these requirements. Additionally, the Department does not have policies or procedures outlining when its regional offices should include such conditions when issuing permits.

We analyzed DART data and found the Department issued 27,349 environmental permits between April 2017 and October 2019 for activities that could potentially contribute to the spread of invasive species. Permits were issued for activities such as mining, construction of dams, dredging, dock repairs, and other projects in close proximity. With the aid of GIS software, we used both the DART and Department data reported in iMap to identify which of these permits were for activities close to locations where invasive species have been observed – locations with a higher risk of spreading invasive species. We identified 2,314 permits for activities located within

a quarter-mile of invasive species sightings between April 2012 and March 2017 (see Exhibit B). The majority of these permits were issued for work near a prohibited invasive species, such as Giant Hogweed (see Images 6 and 7), which is not allowed to be transported, introduced, or propagated.

Images 6 and 7: Giant Hogweed *(Heracleum mantegazzianum)* is a large invasive plant that can cause painful burns and permanent scarring. Brushing against or breaking the plant releases sap that, combined with sunlight and moisture, can cause a severe burn within 24 to 48 hours. These plants were observed in Cayuga County in July 2018.

Of the 2,314 permits, we sampled 150 from three Department regional offices. We confirmed 146 (97 percent) described work activities that could potentially spread invasive species. Most of these activities included the use of construction equipment to move dirt, dredge, install docks, or repair shorelines and banks. We found 123 of the 146 permits (84 percent) did not include conditions to mitigate the potential spread of invasive species. The remaining 23 included written conditions to help control the spread of invasive species. However, while these permits contained general monitoring conditions subject to inspection by the Department, no guidance was provided to regional staff on how to monitor the provisions of the permit relating to invasive species.

In some cases, regional staff did not monitor any provisions of the permits. Additionally, while DART has several options for adding invasive species management provisions to environmental permits, the Department has not provided guidance on when staff should use these options. Rather, this is at the discretion of regional staff, creating little consistency regarding the timing and types of conditions added to the permits.

Also, while iMap is readily available to regional staff who develop permits, not all are aware the tool exists and therefore are not utilizing it to assess invasive species risks when issuing permits. Instead, regional staff rely on self-reported information from the permittee or information provided on the application to make these determinations.

The Department stated that discussions regarding the spread of invasive species commonly occur in reviewing large projects, such as pipelines, because the risk for spreading invasive species is a major concern when equipment must cross multiple streams and wetlands during construction. However, as we found in our review, Department efforts to limit the spread of invasive species through environmental permits are inconsistent.

In addition to the environmental permits found in DART, the Department issues general permits to five utility companies for maintenance and management of vegetation near utility transmission lines. The Department developed a best practices document to guide permittees on minimizing the spread of invasive species when performing work under these general permits. Each time permittees want to perform maintenance work under these permits, they must notify the Department through a notice of intent. Each region is responsible for reviewing these notices to determine

whether there are any potential issues or whether any other controls or conditions need to be assigned under the permit. However, the Department's central office does not monitor or oversee compliance with the permit terms or whether regional offices are adequately monitoring compliance, nor is it notified when a permittee issues a notice of intent.

Clear policies, procedures, and guidance would enhance consistency among regions for mitigating the spread of invasive species and provide a standard the Department could use in its oversight function.

Invasive Species Identification and Assessments

Assessments are essential for controlling the spread of non-native species in the State, as they establish which species warrant regulation. Of the 566 non-native species assessments conducted by the Department, contractors, and Ag and Markets between February 2008 and November 2019, we found 100 were not complete:

- 34 non-native species designated as prohibited were not fully assessed for socio-economic impact; and
- For 66 non-native species, which were ultimately deemed not to be regulated or prohibited, answers were missing for the assessment questions that serve as the basis for classification and regulation decision making.

The Department recognized the gaps in the 34 assessments of prohibited invasive species, and stated they were due to staffing issues at Ag and Markets when the assessments were performed. Furthermore, the Department explained that, although the Council Report provides assessment guidance, the rule-making process does not require that assessments be conducted prior to establishing prohibited and regulated species lists. However, it has been over five years since the species were deemed prohibited in regulation. Without timely, complete assessments, the potential harmful effects of these species on the State are not apparent. We encourage the Department to complete these 100 assessments to ensure decision makers have a thorough understanding of the impact of these invasive species. The Department responded that it is working on this, but also indicated additional resources would be needed.

The Department has made considerable efforts to identify potential invasive species and has completed assessments on 566 non-native species. However, we identified possible improvements. While the Council Report offers some guidance on the identification of potential invasive species, it does not provide specifics for when a full assessment is warranted. Similarly, the Department lacks any written policies or procedures in this area.

Using both Department data reported in iMap and data reported in the Early Detection and Distribution Mapping System (EDDMapS), a publicly available web-based mapping system similar to iMap maintained by the Center of Invasive Species and Ecosystem Health at the University of Georgia, we identified an additional 279 non-native species unassessed by the Department that may pose a threat to the State. EDDMapS defines invasive species in the same way as New York State and combines information from other databases to create a national network of invasive species distribution data, which is reviewed by state verifiers to ensure accuracy, according to its website.

The Department explained that 91 of the 279 species reported but not assessed – 40 of which have had confirmed sightings in the State between January 2014 and March 2019 (in some cases, with over 100 reported sightings of a single species) – are currently being tracked in iMap and didn't show invasive traits affecting the environment, human health, or the economy. However, the Department was unable to support its conclusion that full assessments were not warranted. We researched some of these species and found evidence of potential adverse effects to human health and the environment (see examples in Images 8–10).

		
Deer Ked ***(Lipoptena cervi)***	**Japanese Yew** ***(Taxus cuspidata)***	**Dasy; Red Alga** ***(Heterosiphonia japonica)***
Image 8: Traditionally found in Norway, Sweden, and Finland, this species of biting deer fly has been found to carry diseases such as Lyme disease. *Photo Source: iStock.com/Hendrick_L*	Image 9: Potentially one of the most poisonous woody plants in the world, it can be harmful to humans, livestock, wild animals, and fish. *Photo Source: iStock.com/Yicheng Du*	Image 10: Native to Asia, it can reduce oxygen levels in water and can take nutrients native species rely on, reducing the diversity of local species. *Photo Source: iStock.com/Philip Openshaw*

We reviewed all invasive species observations in EDDMapS from April 2017 to June 2019 in New York State and certain states' counties directly bordering New York State (Connecticut, Massachusetts, New Jersey, Pennsylvania, and Vermont). Because these counties directly border New York, the ecosystems are similar and likely susceptible to the same invasive species. We compared EDDMapS and iMap data and identified 188 invasive species the Department was not tracking on iMap. These species were not assessed, are not scheduled to be assessed, and are not being tracked in iMap.

Early Detection Efforts

We also found the Department may be missing opportunities for early identification of potential invasive species. Based on interviews with regional staff, we found they were unaware of iMap and the data it contains – information that could be useful for managing the spread of invasive species. Also, while the Department actively participates in early detection methods, such as trap checking and other forms of direct observation, to identify specific forest-related TIS, the traps are not always thoroughly checked for all potential invasive species. For example, only after the U.S. Forest Service requested the Department check trap samples for a potential invasive species, similar to the emerald ash borer (see Images 11 and 12), was the non-native species identified in one area of the State. The Department explained some trap samples (prioritized by location) are thoroughly analyzed, while others are not. Officials state a lack of staffing prevents them from checking all traps for all potential invasive species.

Images 11 and 12: Emerald ash borer *(Agrilus planipennis)* is an invasive beetle from Asia that infests and kills North American ash species including green, white, black, and blue ash. All of New York's native ash trees are susceptible to the beetle. Infestations are now present in more than 40 counties in the State. The emerald ash borer and its activity were observed in Albany County in June 2018 (left) and September 2018 (right).

Recommendations

1. Develop a process to:
    - Communicate duties and responsibilities to boat stewards;
    - Monitor steward performance and compliance against standards outlined in the Handbook; and
    - Coordinate with other oversight entities to improve preventive efforts across public boat launches statewide, ensuring consistency and compliance with signage and other requirements.
2. Develop and implement policies, procedures, or guidance on:
    - Issuing permits and monitoring compliance relating to invasive species;
    - Circumstances that warrant adding specific invasive species management mitigation provisions to permits;
    - Identifying non-native species and conditions that should trigger assessments for non-native species; and
    - Periodic complete testing of trap samples for potentially invasive species.
3. Communicate the existence of and potential uses of iMap to regional staff.
4. As soon as practicable, finish all incomplete assessments.

Audit Objective, Scope, and Methodology

The objective of our audit was to determine if the Department was effectively managing invasive species to prevent and mitigate the harmful effects of invasive species populations in New York State. The audit covers the period April 1, 2017 through November 22, 2019.

We examined the Department's internal controls and assessed their adequacy as they related to our audit objective. We reviewed applicable policies, procedures, laws, and regulations, and interviewed Department staff responsible for managing invasive species and permitting.

We obtained and used data from several Department sources, including WISPA, DART, and assessments data. We generally found the data to be sufficiently reliable for purposes of our audit. To accomplish our objective, we obtained and reviewed the Department's data on 837 public boat launch sites across the State and obtained WISPA data. We found the data, while in some cases incomplete (WISPA) or of undetermined completeness (boat launch data), was sufficiently reliable for our audit purposes. None of the samples selected for our audit testing were projected or intended to be projected across the populations as a whole.

With the aid of GIS software, we used both the boat launch and WISPA data to identify the presence of boat stewards at 194 launch sites and the absence of boat stewards at 643 of the 837 launch sites from January 2018 to June 2019. We further analyzed the WISPA data and found 42 of the 194 boat launch sites were high-risk areas where invasive species could potentially be spread. At these sites, WISPA data showed that stewards recorded the presence of invasive species on watercraft at least 25 percent of the time upon the retrieval of the watercraft from the waterbody. We selected a judgmental sample of 30 (of the 42) boat launch sites to visit to determine if the public is taking AIS spread prevention measures and if the appropriate educational signage was present. Our selection of the 30 sites was based on WISPA data, which identified sites with at least 25 percent more watercraft launches recorded than retrievals. Of the 643 launch sites, we judgmentally selected a sample of 100 launch sites to visit to determine if the appropriate educational signage was present. Our selection of the 100 sites was based on the type of launches (non-hand launch).

From the Department's DART data, we reviewed 32 different active permit types from April 2017 to October 2019. We identified 13 types (27,349 permits) that include permitted activities, such as mining operations, construction of dams, or dredging, that could potentially contribute to the spread of invasive species. We also obtained and reviewed the Department's data reported in iMap. We could not test to determine the reliability of the data; however, the information we used is publicly available and the application is commonly used by the Department and other entities such as environmental groups, all of whom have a vested interest in the accuracy of this data, which provides some control of its reliability. We used iMap to determine what steps the Department may be taking based on the publicly reported information. With the aid of GIS software, we used both the DART and data reported in iMap to identify which of these permits have a higher risk of potentially spreading invasive species

because the activities being done are very near invasive species. We identified 2,314 permits with activities performed within a quarter-mile of confirmed sightings of invasive species between April 2012 and March 2017. Of the 2,314 permits, we judgmentally sampled a total of 150 from three of the nine regional offices, selecting those with the greatest number of permits issued and invasive species sightings to identify permits at high risk of spreading invasive species.

We also obtained and reviewed invasive species observation data from April 2017 to June 2019 from EDDMapS. Similar to iMap data, we could not test to determine the reliability of the EDDMapS data; however, the information we used is publicly available and the application is commonly used by entities such as environmental groups.

As part of audit procedures, the audit team used GIS software for geographic analysis. As part of the geographic analysis, we developed visualizations (see Exhibits A and B) to improve understanding of our report. Portions of the maps contained in this report include the intellectual property of ESRI and its licensors and are used under license. Copyright © 1987-2020 ESRI and its licensors. All rights reserved.

Statutory Requirements

Authority

This audit was performed pursuant to the State Comptroller's authority in Article V, Section 1 of the State Constitution and Article II, Section 8 of the State Finance Law.

We conducted our performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

In addition to being the State Auditor, the Comptroller performs certain other constitutionally and statutorily mandated duties as the chief fiscal officer of New York State. These include operating the State's accounting system; preparing the State's financial statements; and approving State contracts, refunds, and other payments. In addition, the Comptroller appoints members to certain boards, commissions, and public authorities, some of whom have minority voting rights These duties may be considered management functions for purposes of evaluating threats to organizational independence under generally accepted government auditing standards. In our opinion, these functions do not affect our ability to conduct independent audits of program performance.

Reporting Requirements

A draft copy of the report was provided to Department officials for their review and comment. Their comments were considered in preparing this final report and are attached in their entirety at the end of it, along with our own State Comptroller's Comment addressing specific Department statements. In general, officials agreed with our recommendations.

Within 180 days after final release of this report, as required by Section 170 of the Executive Law, the Commissioner of the Department of Environmental Conservation shall report to the Governor, the State Comptroller, and the leaders of the Legislature and fiscal committees, advising what steps were taken to implement the recommendations contained herein, and where recommendations were not implemented, the reasons why.

Exhibit A

Click to View the Interactive Map

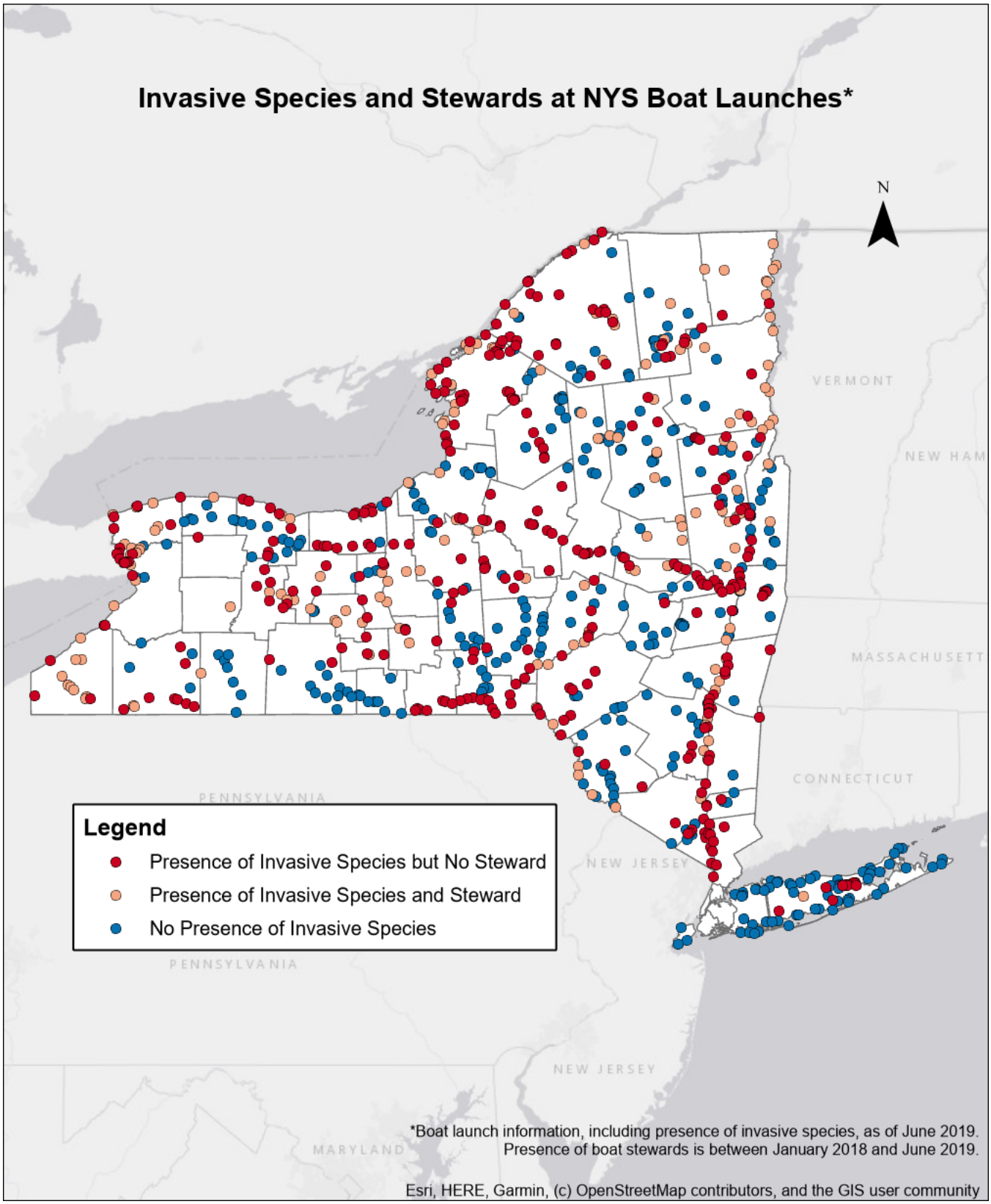
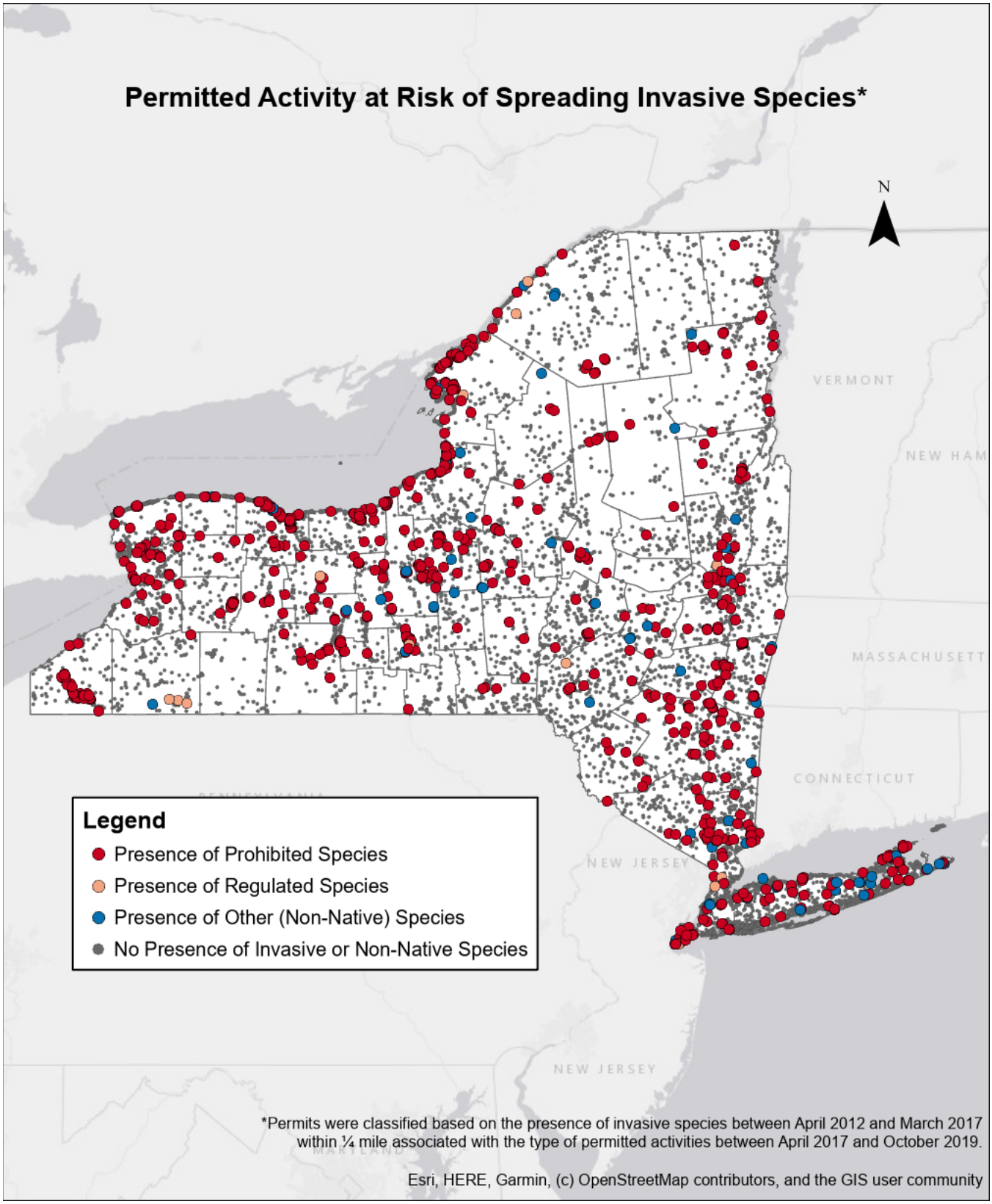


Exhibit B

Click to View the Interactive Map



Agency Comments

OFFICE OF THE COMMISSIONER

New York State Department of Environmental Conservation
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JUN 18 2020

Mr. Mark Ren
Office of the State Comptroller
Division of State Government Accountability
110 State Street – 11th Floor
Albany, New York 12236-0001

Dear Mr. Ren:

The Department of Environmental Conservation (DEC) has reviewed the Office of the State Comptroller's Draft Audit Report entitled *Management of Invasive Species*. DEC's comments with respect to this report are contained in the enclosed document. Please contact Andrew Fischler, Director of Internal Audit, at (518) 402-9761 if you have any questions.

Sincerely,

Basil Seggos
Commissioner

NEW YORK STATE | Department of Environmental Conservation

Department of Environmental Conservation
Management of Invasive Species
2019-S-26
Response to OSC Draft Report

The Department of Environmental Conservation (DEC) has reviewed the Office of the State Comptroller's, March 5, 2020, draft report in connection with the management of invasive species. DEC's Bureau of Invasive Species and Ecosystem Health (BISEH) places the highest priority on early detection of and rapid response to high-impact invasive species that may threaten the health of our lands and waters. BISEH collaborates with numerous stakeholders including Federal and State agencies and non-governmental organizations to provide expertise, assistance, and action where invasive species are a threat within the State. These efforts have minimized the introduction, establishment and spread of exotic pests like Eurasian boar, northern snakehead, hydrilla, and Asian longhorned beetle.

The following is DEC's response to the report's findings and recommendations.

Findings – Invasive Species Assessments

- **Pages 1, 9, and 13:** There are references to "missing information and/or answers" associated with DEC's assessments of invasive species. These instances refer to assessments of invasive species wherein select questions were completed with the answer of "unknown." An answer of unknown does not constitute an incomplete assessment, it means that information was not available. Assessments of invasive species with "unknown" responses to questions are complete assessments.

Comment 1

- **Page 13:** Regarding the sentence stating, "we found 100 (non-native species assessments) were not complete," we agree that 34 of these were not complete; however, the remaining 66 are complete. As previously explained, these assessments included "unknown" as the answer to questions, which does not make them incomplete.

Recommendations

1. Develop a process to:
   - Communicate duties and responsibilities to boat stewards;
   - Monitor steward performance and compliance against standards outlined in the Handbook; and
   - Coordinate with other oversight entities to improve preventive efforts across public boat launches statewide to ensure consistency and compliance with signage and other requirements.

   DEC Response: We generally agree with the recommendation and will work to further strengthen internal controls associated with the monitoring of boat stewards, subject to DEC oversight, to ensure they are performing their assigned duties. DEC will continue to encourage communication with boaters, anglers, and other recreational water users to raise awareness about aquatic invasive species and practices that reduce the chance of spreading aquatic invaders.

2. Develop and implement policies, procedures, or guidance on:

- Issuing permits and monitoring compliance relating to invasive species;
- Circumstances that warrant adding specific invasive species management mitigation provisions to permits;
- Identifying non-native species and conditions that should trigger assessments for non-native species; and
- Periodic complete testing of trap samples for potentially invasive species.

DEC Response: We generally agree with the recommendation and have undertaken additional steps to improve the consistent and appropriate inclusion of permit conditions related to the control of invasive species. During DEC's permitting process, it is common for staff to address concerns regarding the spread of invasive species where the project involves equipment, such as boat, gear, or trailers, crossing multiple streams or wetlands during construction.

3. Communicate the existence of and potential uses of iMap to regional staff.

DEC Response: We generally agree with the recommendation and in order to make iMap more fully known and consistently utilized, DEC has scheduled training to educate regional staff on its effective use and will continue future trainings as necessary.

4. As soon as practicable, finish all incomplete assessments.

DEC Response: We agree, generally, with the recommendation that assessments should be complete. However, we disagree with the finding that 100 assessments were not complete and will therefore complete assessments of the 34 that we agree were incomplete.

State Comptroller's Comment

1. Although during the initial assessments, some of which date back to 2008, there may have been information that was unknown at the time, Department officials have not updated the assessments or determined if this information has since become known to answer critical questions (e.g., ecological impact, difficulty of control). As of the time of our audit, officials could not state whether the information was still "unknown" or whether the assessments were simply not updated. Therefore, for purposes of our audit, we considered them incomplete.

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