

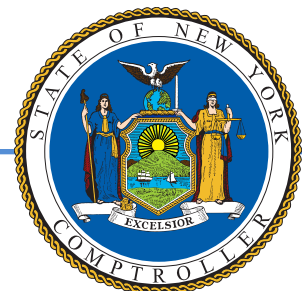
Department of Agriculture and Markets

Protection of Managed Pollinators (Honey Bees)

Report 2021-S-40 | January 2023

OFFICE OF THE NEW YORK STATE COMPTROLLER
Thomas P. DiNapoli, State Comptroller

Division of State Government Accountability



Audit Highlights

Objective

To determine whether the Department of Agriculture and Markets (Department) is adequately monitoring the health of honey bee pollinators to prevent and mitigate harmful effects to their populations. This audit covered the period January 2017 through August 2022.

About the Program

Wild and managed pollinators are critically important to the health of New York State's environment and agricultural economy. The State has more than 7 million acres of agricultural production, and many of the State's leading crops – such as apples, cabbage, and berries – rely heavily on pollination by insects. These crops' plants use pollen to produce a fruit or seed and cannot reproduce without pollen carried to them by foraging pollinators. However, the pollinator population has declined drastically during the last three decades due to, among other issues, invasive pests and diseases (including American foulbrood – a highly contagious and very destructive bacterial disease), exposure to pesticides and other chemicals, and changing climate. In 2016, the State developed the New York State Pollinator Protection Plan (Plan) to address the high loss of pollinators in the State. The Plan is a multi-agency effort, with the Department primarily responsible for managed pollinators, typically honey bees. Honey bees are essential to the agricultural industry for the pollination services they provide. According to the U.S. Department of Agriculture, honey bees pollinate \$15 billion worth of crops in the United States each year. About one-third of the food eaten by Americans comes from crops pollinated by honey bees, including more than 130 types of apples, melons, cranberries, pumpkins, squash, broccoli, and almonds, to name just a few. Therefore, honey bees are the United States' primary commercial pollinator.

Beekeepers are generally private individuals or companies that raise and care for colonies of honey bees. In 2007, under sections of the State's Agriculture and Markets Law, beekeepers were required to register their apiaries for the purpose of assessing the size and condition of the State's honey bee population. This requirement was eliminated in 2010 but then reinstated in 2021. In December 2021, Article 15 of the Agriculture and Markets Law (Law) was amended to include the Cooperative Honey Bee Health Improvement Program (Program), which, among other actions, reinstated the apiary registration requirements. One goal of the Program is to document the health of the State's managed pollinator population, including the presence of parasites, diseases, and environmental threats. To this end, the Department may, at its discretion, perform general inspections of apiaries for the presence of infections, contagious or communicable diseases, insects and parasitic organisms adversely affecting bees, and species or subspecies of bees that are harmful to the State's managed bee population, crops, or other plants. The Department also conducts apiary inspections to certify nucleus colonies (nucs) and queens for sale or transport. Where honey bees are being shipped into the State, the Law also requires a permit from the Department or a certificate from the state of origin attesting that the honey bees are disease-free. These documents should certify that a proper inspection was made no sooner than 60 days preceding the date of shipment.

Key Findings

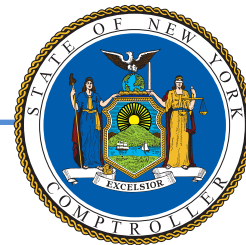
- The Department has established sufficient processes to meet its responsibility to certify nucs and queens for sale and to meet the needs of beekeepers requiring certificates to ship honey bees out of State. It was able to conduct all the required inspections requested for the sale of nucs

and queens as well as all those requested for transport for the 5-year period ending December 2021. Further, the Department has procedures in place for addressing the discovery of American foulbrood during inspections – a disease for which the Law allows no tolerance.

- The Department does not have support or reasonable assurance that it has identified the full population of active apiaries in the State, which is necessary for thorough monitoring and inspection purposes.
- The Department could strengthen actions to combat disease and parasitic organisms within colonies by including additional tests for certain diseases, and could improve its efforts to ensure honey bees entering the State are healthy and free from disease.

Key Recommendations

- Improve registration and apiary inspection efforts, which may include but not be limited to:
 - Increasing efforts to identify and register active apiaries;
 - Incorporating identification of additional diseases, insects, and parasites that may be contributing to colony losses in the State;
 - Officially establishing and publishing tolerance levels for diseases or parasitic organisms and following up on treatment recommendations;
 - Considering the use of alternative testing methods that will help preserve honey bee populations; and
 - Expanding risk assessment criteria for targeting inspection activities.
- Develop additional procedures to ensure honey bee shipments into the State are certified disease- and parasite-free, and if warranted, consider reinspection upon entering the State.



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

January 19, 2023

Richard A. Ball
Commissioner
Department of Agriculture and Markets
10B Airline Drive
Albany, NY 12235

Dear Commissioner Ball:

The Office of the State Comptroller is committed to helping State agencies, public authorities, and local government agencies manage their resources efficiently and effectively. By so doing, it provides accountability for the 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 *Protection of Managed Pollinators (Honey Bees)*. 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

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Glossary of Terms

Term	Description	Identifier
Department	Department of Agriculture and Markets	<i>Auditee</i>
Apiary	Any location used for raising honey bees or producing honey or other bee-related products	<i>Key Term</i>
Colony	Any production unit of honey bees	<i>Key Term</i>
Law	Article 15 of the Agriculture and Markets Law	<i>Key Term</i>
Managed pollinators	Honey bees	<i>Key Term</i>
Nuc	Nucleus colony: a starter honey bee colony, consisting of a laying queen and up to five frames of brood and bees	<i>Key Term</i>
Plan	New York State Pollinator Protection Plan	<i>Key Term</i>
Program	Cooperative Honey Bee Health Improvement Program	<i>Key Term</i>
USDA	U.S. Department of Agriculture	<i>Federal Agency</i>

Background

Wild and managed pollinators are critically important to the health of New York State's environment and agricultural economy. The State has more than 7 million acres of agricultural production, and many of the State's leading crops – such as apples, cabbage, and berries – rely heavily on pollination by insects. These crops' plants use pollen to produce a fruit or seed and cannot reproduce without pollen carried to them by foraging pollinators. However, the pollinator population has declined drastically during the last three decades due to, among other issues, invasive pests and diseases (including American foulbrood – a highly contagious and very destructive bacterial disease), exposure to pesticides and other chemicals, and changing climate.

In 2016, the State developed the New York State Pollinator Protection Plan (Plan) to address the high loss of pollinators in the State. The Plan is a multi-agency effort, with the Department of Agriculture and Markets (Department) primarily responsible for managed pollinators, typically honey bees (see Figure 1).

According to the Plan, the loss of managed honey bee colonies in the State exceeded 50% and some commercial migratory pollinators experienced colony losses in excess of 70%. The Department of Environmental Conservation is primarily responsible for conservation of wild pollinators, such as butterflies and hummingbirds (see Figures 2 and 3). More than 450 wild pollinators can be found in the State and are important not only to the pollination of commercial crops, but also to the biodiversity of the environment. Efforts by other State agencies, including but not limited to the Office of Parks, Recreation and Historic Preservation and the Department of Transportation, were also outlined in the Plan.



Figure 1 – Honey bees returning to their colony.

Photo Source: iStock.com/bo1982



Figures 2 and 3 – Wild butterfly and hummingbird pollinating.

Photo Source: iStock.com/Gunther Fraulob and iStock.com/nailzchap

Honey bees are essential to the agricultural industry for the pollination services they provide. According to U.S. Department of Agriculture (USDA), honey bees pollinate \$15 billion worth of crops in the United States each year. Further, about one-third of the food eaten by Americans comes from crops pollinated by honey bees, including more than 130 types of apples, melons, cranberries, pumpkins, squash, broccoli, and

almonds, to name just a few. Therefore, honey bees are the United States' primary commercial pollinator. Beekeepers are generally private individuals or companies that raise and care for colonies of honey bees. The Department breaks beekeepers into three categories based on the number of honey bee colonies they maintain (see Figure 4). Any colony can contribute to pollination but, according to Department officials, those maintained by commercial beekeepers likely provide more pollination services based on the sheer size of their operation.

In 2007, under sections of the State's Agriculture and Markets Law, beekeepers were required to register their apiaries (see Figure 5) for the purpose of assessing the size and condition of the State's honey bee population. This requirement was eliminated in 2010 but then reinstated in 2021. In December 2021, Article 15 of the Agriculture and Markets Law (Law) was amended to include the Cooperative Honey Bee Health Improvement Program (Program), which, among other provisions, reinstated the apiary registration requirements. When registering their apiaries, beekeepers are now required to report certain information to the Department on the honey bees they manage, including the number of managed colonies they maintain, the county in which each of the colonies is located, current contact information of the individual(s) responsible for the care of the honey bees, and whether they intend to sell nucleus colonies (nucs). Similar information was required to be reported in 2007. There is no cost to beekeepers for registration, and the Law authorizes the Department to issue rules and regulations necessary to carry out and give full force and effect to the provisions of the Law and to institute necessary action to enforce compliance with the Law.

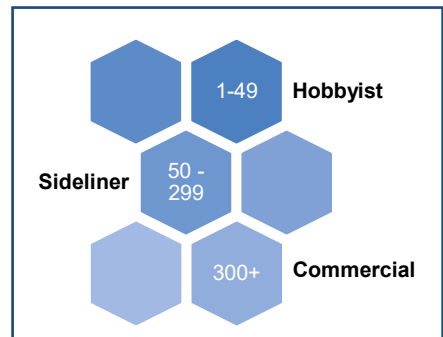


Figure 4 – Beekeeper categories based on number of colonies maintained.



Figure 5 – An apiary is a location used to maintain honey bees and consists of honey bee colonies which are housed within beehive boxes.

Photo Source: iStock.com/krblockhin

One goal of the Program is to document the health of the State's managed pollinator population, including the presence of parasites, diseases, and environmental threats. To this end, the Department conducts, at its discretion, general inspections of apiaries for the presence of infections, contagious or communicable diseases, harmful insects and parasitic organisms, and species or subspecies of bees that are injurious to the State's managed bee population, crops, or other plants. In addition, where beekeepers indicate they intend to sell nucs or queens, the Department conducts an initial inspection of the apiary to ensure that they are fit for sale and

annual inspections thereafter. Colonies are deemed unfit and cannot be sold if the inspection finds evidence of American foulbrood. If the inspection determines the honey bees are fit for sale, the Department will issue a certificate to the beekeeper. The Law also allows the Department to establish tolerance levels for other diseases and parasitic organisms, which should be published on the Department's website.

Furthermore, the Law requires that shipments of colonies of honey bees into the State must be accompanied by a permit from the Department or a certificate of freedom from disease issued by the state of origin. These documents should certify that a proper inspection was made no sooner than 60 days preceding the date of shipment. The Department should receive these certificates prior to a shipment entering the State.

The Department's efforts for overseeing managed honey bees and implementing requirements under the Law are managed by one full-time apiculturist and four seasonal inspectors. For calendar years 2017 to 2021, the Department performed 2,059 inspections of 1,149 active apiaries. The inspection season begins in the spring with the required inspections of the sale of nucs and queen honey bees. Department officials state that conducting these inspections first minimizes the risk of spreading infected colonies across the State. Another large portion of the inspection effort is performed in the late summer and early fall when beekeepers prepare to migrate their colonies out of the State. These inspections are not required by Law but are required by other states in order for beekeepers to ship their honey bee colonies into the destination state. The Department conducts general inspections when time permits.

Audit Findings and Recommendations

The Department has established sufficient processes to meet its responsibility to certify nucs and queens for sale and to meet the needs of beekeepers requiring certificates to ship honey bees out of the State. The Department was able to conduct all the required inspections requested for the sale of nucs and queens as well as all those requested for transport for the 5-year period ending December 2021. Further, the Department has conducted outreach and provided education to beekeepers to inform them of registration requirements and to get apiaries registered, as required by the Law. The Department also has procedures in place for addressing the discovery of American foulbrood during inspections – a disease for which the Law allows no tolerance.

However, the Department does not have support or reasonable assurance that it has identified the full population of active apiaries in the State, which is necessary for thorough monitoring and inspection purposes. We identified additional steps the Department could take to ensure a more accurate accounting of the State's population of active apiaries – specifically by utilizing information already available. Additionally, we found the Department could increase actions to combat disease and parasitic infections within colonies by including additional tests for certain diseases such as European foulbrood and Nosema.

Also, while the Department puts significant effort into inspecting and certifying colonies for out-of-State travel, it could improve its efforts to ensure honey bees entering the State are healthy and free from disease, as we identified 114 missing certificates for colonies entering the State between 2017 and 2021. For honey bees coming into New York from Maryland, for example, the Department did not issue a permit or obtain a disease-free certification from over 75% of the beekeepers.

Numerous factors, including changes in the Law, staff turnover at the State apiary positions, and the decline in seasonal inspectors (from approximately 10 in 2009 to four in 2022), collectively have challenged the Department's ability to monitor honey bee health and enforce requirements of the Law.

Apiary Registration and Identification

The 11-year gap in the apiary registration requirement notwithstanding, the identification of a complete population of active apiaries is critical for the Department to monitor and inspect apiaries and perform its duties to protect honey bee populations from disease and parasites. The Department estimates there are about 80,000 honey bee colonies in the State but has limited support for that number and no assurance that it is accurate.

The Department relies primarily on education and outreach to inform beekeepers of registration requirements. This is done mainly through its website publications, meetings, and round table discussions with various bee groups and by word-of-mouth. While these are useful efforts to identify and promote registration of apiaries, we identified additional steps the Department could take to improve assurances that it more accurately identifies the population of active apiaries in the State – specifically by utilizing information already available.

Utilization of Prior Apiary Database

Although no longer used, the original beekeeper and apiary database from the prior apiary registration requirement remains an archive of valuable information, which the Department could, but does not, tap into to identify currently unregistered beekeepers and their apiaries. After reviewing both the current database populated with registration information collected after 2021 and information in the prior database, we found significantly fewer apiaries recorded in the new one compared to the prior one, which suggests that apiaries that were previously identified as active have not registered under the existing Law.

The prior database recorded 2,523 active beekeepers with 5,346 active apiaries across the State. It also recorded an additional 6,840 inactive apiaries. We found that 2,316 (92%) of the 2,523 active beekeepers from the original database have not registered with the Department as of August 2022. The new database included an additional 1,081 beekeepers not registered in the prior database.

We selected a sample of 120 apiaries from the prior database, comprised of those identified as active or inactive (see Figure 6). For these 120 apiaries, the Department either had never inspected them or had not inspected them in the 5 years preceding December 2021. For 112 of the 120 apiaries selected, the beekeepers listed as the owners had not registered with the Department as of August 2022. Through physical observation at the registration address, we noted whether there were beehive boxes located that appeared to continue to be managed. We found that 33 (28%) of the 120 apiaries observed appeared to be in operation. We could not determine the status of the remaining 87 apiaries because we either could not confirm that the structure observed was a beehive box (nine) or were unsure of the exact location of the apiary or whether the beehive boxes were in viewing distance (78) from a public access point (see Figure 7).

Of the 33 apiaries we observed that appeared to be in operation, 28 (85%) had not registered with the Department as of August 2022 – with eight of those classified as commercial beekeepers (which maintain over 300 colonies). Figures 8 and 9 illustrate our observations of two of these apiaries.

Figure 6 - 120 Apiary Sample by Category

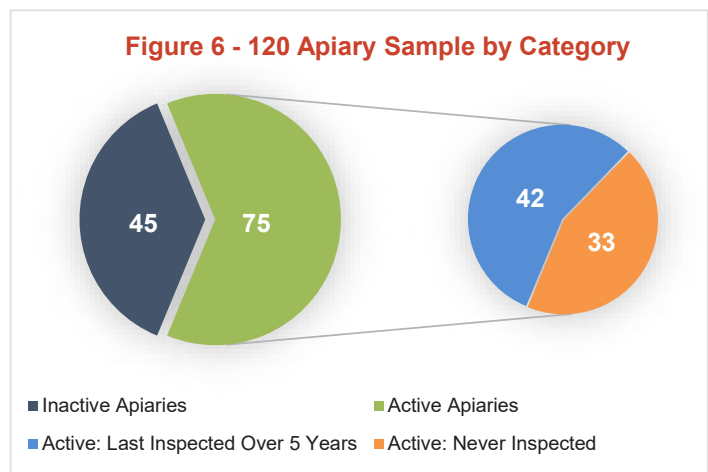


Figure 7 - Apiary Sample Results

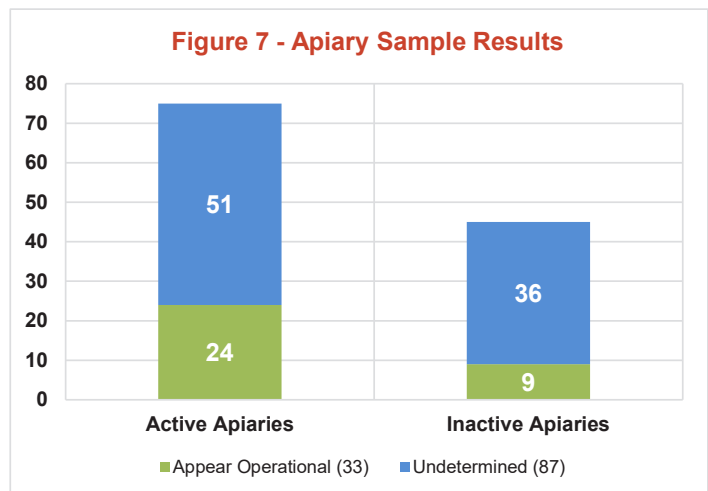




Figure 8 – A large apiary located near agricultural land was observed in May 2022 and appears to still be in operation. The apiary was logged in the prior Department database as inactive in 2008 and belongs to an active commercial beekeeper.

Based on the results of our observations, it is clear that the prior database contains information that could be used to identify active but currently unregistered apiaries. Given the limited staff and other competing responsibilities, we recognize the Department cannot investigate all the formerly registered apiaries. However, it could take a risk-based approach to investigate these apiaries or incorporate it into other responsibilities, such as general inspections or inspections conducted for sale or transport that may be located near these potentially unregistered and operating apiaries.

Additionally, the prior database contains contact information of beekeepers (email addresses and phone numbers) of the formerly registered apiaries. At a minimum, the Department could attempt to contact these beekeepers to inquire whether the apiaries are still operating and aid them in registering.

Inspector Observations

The Department's seasonal inspectors at times identify unregistered apiaries when conducting other scheduled inspections. While accompanying Department staff on scheduled inspections, we identified and recorded 13 apiaries that were not registered in the prior or current database (see Figure 10). One Department inspector stated they come across unregistered apiaries during their inspections but do not generally log or record the location of the apiaries because of time constraints. If the inspectors were allowed the time to log and



Figure 9 – Apiary observed in May 2022. This apiary was logged as active in the prior Department database but was last inspected in 2005 and belongs to an active commercial beekeeper.



Figure 10 – One of the 13 apiaries we identified that was not registered in the new system was observed in May 2022.

investigate potentially unregistered apiaries, the Department could leverage existing inspection efforts to improve apiary registration.

Investigation of Online Advertisements

Beekeepers often use social media platforms, such as Facebook Marketplace or Craigslist, to advertise the sale of nucs and queens. These advertisements could be used to identify beekeepers that are not registered or that are selling honey bees without a required inspection by the Department. Although the Department does not generally review these online advertisements, we found they could be a useful supplement to existing efforts to identify and register beekeepers.

We reviewed advertisements from multiple platforms between March 2022 and June 2022 and identified 35 unique advertisements for the sale of honey bees across the State. Using the information available in the advertisements (see Figure



Figure 11 – One of the 16 ads published by an unregistered beekeeper selling honey bees.

11), we were able to confirm that 16 sellers were not registered as beekeepers with the Department as of August 2022. For 12 of the 35 advertisements, sufficient seller information was not provided to determine if the seller was or was not registered. The remaining seven advertisements were from beekeepers registered with the Department.

Presence of Diseases and Parasites

In recent years, the health of managed pollinators has been challenged by parasites, infectious diseases, habitat fragmentation, and exposure to pesticides. The Law has established a zero-tolerance level for American foulbrood, and the Department has procedures in place for addressing the discovery of the disease during inspections. For the 5-year period ending December 2021, Department records show inspections identified 433 cases of American foulbrood. Department records support that they execute requirements under the Law when American foulbrood is identified. While the Law allows the Department to establish and publish on its website tolerance levels for other diseases, insects, or parasites, it has not yet done so.

One of the most devastating threats to honey bees is the Varroa destructor (Varroa mite) (see Figure 12). According to the USDA, this is the most serious pest of honey bees, inflicting more damage and higher economic costs than all other apicultural diseases. These parasites also transmit numerous viruses, such as RNA viruses. Examples of RNA viruses include deformed wing virus (see Figure 13), Israeli acute

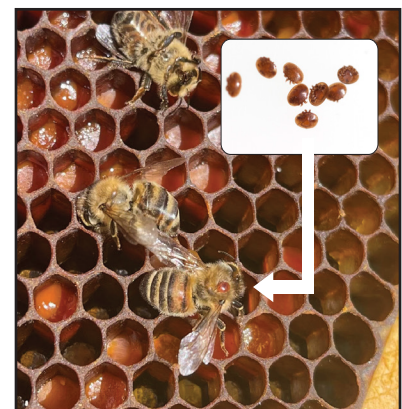


Figure 12 – In May 2022, we observed an inspection performed by the Department, and it was discovered Varroa mites likely caused a colony loss. The mites attach and feed on the body of the honey bee, weakening it.

Photo Source:
iStock.com/emmer1940



Figure 13 – Honey bee with deformed wing virus. Honey bees with deformed wing virus have a shorter life span and likely are not successful pollinator contributors.

Photo Source:
iStock.com/DebraHollern

paralysis virus, and Black Queen Cell Virus. Other diseases transmitted by the Varroa mite, such as Parasitic Mite Syndrome, can be found in conjunction with high Varroa mite infestations. If severe and left untreated, infestations can kill an entire colony. Honey bees can travel over three miles from their colonies and can spread these diseases or parasites not only within the colony but to other honey bee colonies and even wild pollinators, such as bumble bees, on flowers. Using the Department's inspection data, we were able to map and track the presence of Varroa mites found throughout the State for the prior 5-year period ending December 2021.

Despite its destructive capabilities, the Department has not officially established and published on its website a tolerance level for Varroa mites. The Department will test for these and will make a recommendation to the beekeeper to treat the infected colonies if levels exceed two or three mites per 100 honey bees (2% or 3%), depending on time of year, which Department officials stated is an industry standard for the Varroa mite threshold. However, the Department does not follow up with the beekeeper to ensure the treatment was performed. The presence of Varroa mites above 2% or 3% will not prohibit beekeepers from selling nucs and queens or prohibit them from moving colonies out of State – but the Department will note the presence on the certificate it issues to the beekeeper. Failure to establish and publish a tolerance level for Varroa mites and the lack of follow-up with beekeepers to ensure treatment is performed may contribute to further presence of Varroa mites in the State's honey bee population.

Additionally, although there are two different methods available to test for the presence of Varroa mites in a colony – the alcohol wash and a powdered sugar roll – the Department uses the alcohol wash, which requires the killing of approximately 300 honey bees per test. The powdered sugar roll, in contrast, allows for the safe return of the honey bees (female bees will clean the tested bees) to their colonies. Department officials stated that the alcohol wash is a more accurate test than the sugar roll method, and the sugar roll method has limitations during the summer months. Further, officials stated some honey bees may be killed even with the sugar roll method – although it would be less than the 100% of honey bees killed using the alcohol wash method. However, as the USDA considers the sugar roll an effective measure of Varroa mite infestation, it could be an alternative method to consider.

There are also other diseases, insects, and parasites that affect honey bee health that are not currently tested for. The Department's inspection forms and processes

note several different types of tests that should be performed when conducting an inspection. In addition to American foulbrood and Varroa mites, the form includes sections for the testing and identification of Nosema and Africanized honey bees. According to Department officials, inspectors used to test for Nosema but stopped during the COVID-19 pandemic because the laboratory used for testing would no longer test for the disease. However, officials stated they plan on re-establishing a process to test for Nosema. Also, while the certificates the Department issues for the sale and movement of honey bees states the Department has investigated for the presence of European foulbrood, this test is not included as part of the inspection form and the Department does not test for it. Officials stated they are trying to incorporate this test into the inspection processes going forward.

See the interactive journal for additional information on the Varroa mite and its presence in the State.



Inspections

The Department has established sufficient processes to meet its responsibility to certify nucs and queens for sale and to meet the needs of beekeepers that require certificates to ship honey bees out of the State. The Department was able to conduct the required inspections for the sale of nucs and queens as well as all those requested for transport for the 5-year period ending December 2021. While these efforts are important to ensure the health of honey bee populations and the viable production of pollinator-reliant crops, we identified opportunities for incorporating additional risk factors into the Department's inspection process that might further improve it.

Using 2017 USDA Census of Agriculture data, we identified the acreage of fruit and vegetable production for each New York State county. Although not all fruits and vegetables are reliant on pollinators, much of the produce grown in the State is – particularly apples, which the State produces over 1 billion pounds of annually (see Figure 14). For example, Wayne County alone has over 23,000 apple acres. Further,



Figure 14 – Apples produced in New York State and harvested in September 2022.

Orleans and Genesee counties are high producers of cabbage, which is also pollinator dependent and of which the State is the second largest producer in the country.

We compared the Census data to the percentage of active apiaries not inspected at all or within the last 5 years preceding December 2021. For some counties that produce large amounts of fruits and vegetables, many of which are pollinator reliant, we found a high percentage of the active apiaries have not been inspected recently or at all. In each of the five highest-producing counties, the Department did not inspect a significant portion of the active apiaries – and in three of the five, almost none of the active apiaries were inspected (Genesee: 97%; Niagara: 96%; Orleans: 93%; Chautauqua: 88%; Wayne: 63%).

Apiaries in these counties consist of different levels of beekeepers (hobbyist, sideliner, and commercial) and include various numbers of honey bee colonies. As Department officials stated, those belonging to commercial beekeepers are larger (at least 300 honey bee colonies) and pose more of a risk of spreading disease and ineffective pollination. However, any size apiary can contribute to pollination and the spread of disease to other apiaries. Further, despite the inherent risk that active commercial apiaries pose due to the size of the operations and the Department's claim that they are a main area of focus for inspections, we note that the Department inspected only 36 of 190 (19%) active commercial apiaries in the top five pollinator-reliant crop-producing counties (see Honey Bee Interactive Journal).

Department officials stated that their inspection approach addresses the concern relating to effective crop production by focusing on nucs and queens for sale and those for transport. However, while inspection of honey bees for transport from migratory beekeepers to other states is important in protecting the overall health of the population, its greatest benefit is for the receiving state – to provide assurance that New York colonies are healthy before they enter that state. Also, the Department does not record or gather information on where nucs and queens are sold; thus, while these inspections are required and have benefits to the State's honey bee populations, again much of the benefit may be to out-of-State areas receiving honey bees from New York. Therefore, incorporating additional risk assessments, such as focusing on counties that produce the most pollinator-reliant crops, might be beneficial to improving the Department's influence in monitoring honey bee health through inspections.

Migrating Honey Bees

The Department puts significant effort into inspecting and certifying colonies for out-of-State travel, but could improve its efforts to ensure honey bees entering the State are healthy and free from disease. For calendar years 2017 through 2021, honey bees were moved between 19 other states and New York. Some of the states that most frequently exchanged honey bees with New York include Florida, South Carolina, Georgia, and Maryland. The Department should obtain certificates for honey bees entering the State before they arrive; however, officials stated it is their

practice to obtain them after they enter – and we found in some cases they were not received at all. We identified 114 missing certificates for colonies entering the State between 2017 and 2021.

Further, one of the top states from which honey bees were brought into New York was Maryland. However, the Department did not issue a permit or obtain a disease-free certification from over 75% of the Maryland beekeepers bringing honey bees into the State between 2017 to 2021. The Department has also not instituted action to enforce compliance with the Law to address instances when colonies of honey bees enter the State without a permit or certificate from the state from which they are shipped.

We reviewed all 94 out-of-State certificates obtained by the Department from 2020 and 2021 and found that, for 28, the inspection date met the 60-day requirement prior to entering New York State; the remaining 66 certificates lacked date information to make a time period determination. Additionally, while the Law stipulates 60 days as the minimum time frame between when honey bee colonies are inspected and when they are shipped, it does not stipulate a maximum number of days between inspection and shipping. An excessive period of time between the inspection and shipment dates increases the risk of colony infection between the inspection certifying the colony is free from disease and when they enter the State. Of the 28 certificates that contained dates, we identified 19 colonies that were inspected 120 days or more prior to entering New York. Of these 19 colonies, 14 were again inspected by the Department later that same year for out-of-State travel, and, in all cases, the inspection detected the presence of Varroa mites.

Department officials stated they are committed to protecting the health of honey bees and agree that improved monitoring regarding honey bees' movement into the State is needed. According to the officials, they will continue to develop the Department's relationships and procedures in working with other states to address this area.

Recommendations

1. Improve the Department's registration and apiary inspection efforts, which may include but not be limited to:
 - Increasing efforts to identify and register active apiaries;
 - Incorporating identification of additional diseases, insects, and parasites that may be contributing to colony losses in the State;
 - Officially establishing and publishing tolerance levels for diseases or parasitic organisms and following up on treatment recommendations;
 - Considering the use of alternative testing methods that will help preserve honey bee populations; and
 - Expanding risk assessment criteria for targeting inspection activities.

-
2. Develop additional procedures to ensure honey bee shipments into the State are certified disease- and parasite-free, and if warranted, consider reinspection upon entering the State.

Audit Scope, Objective, and Methodology

The objective of our audit was to determine whether the Department is adequately monitoring the health of honey bee pollinators to prevent and mitigate harmful effects to their populations. This audit covered the period January 2017 through August 2022.

To accomplish our objective, 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 the protection of managed pollinators (honey bees). We observed apiary inspections, interviewed Department inspectors, reviewed Program documents (inspection reports and certificate of approvals), and observed accessible unregistered apiaries to complete our assessment of our sample.

We used original beekeeper and apiary registration and inspection data from January 2017 through December 2021. We also used new beekeeper registration data from December 2021 to August 2022. We compared beekeepers registered in both databases and identified over 2,000 beekeepers missing from the new system. We performed data reliability testing on these data sets and found them to be sufficiently reliable for the purpose of our audit. We also used two publicly available online sources (Craigslist and Facebook Marketplace) to identify an additional 16 unregistered beekeepers. We used USDA 2017 Census of Agriculture data to identify each New York State county's acreage of fruit and vegetable production, and selected the top 12 counties of 59 that produced apples, berries, cabbage, and squash. Within those counties, we used the original beekeeper and apiary registration and inspection data to judgmentally select 10 apiaries, for a total of 120 apiaries (45 logged as inactive and 75 logged as active but that were never inspected [33] or were last inspected over 5 years ago [42]) of 11,036. Within each of the 12 counties, the sample of 10 was chosen based on key details in select data fields (e.g., current apiary status and location description), with a focus on being able to visually observe the apiary from a public road. We used the descriptions of the apiary locations found in the database and visited these locations to determine whether the apiaries were still in operation. We were unable to test the reliability of the Census data; however, this serves as the industry standard agricultural data and, as such, the State and federal governments as well as other industry members have a vested interest in the reliability of the data, which provides some control. Further, we limited our use of this data to risk assessment functions, relying on other sources of information or hard copy documents to support our findings when possible. We also used Department certificate data from 2017 through 2021. We performed data reliability testing on the data and found it to be sufficiently reliable for the purpose of our audit. We used this data to identify missing certificates the Department failed to obtain. These samples cannot be, nor were they intended to be, projected across the populations as a whole.

As part of our audit procedures, we used geographic information system (GIS) software for geographic analysis. As part of the geographic analysis, we developed visualizations, both within this report and as part of an external interactive map.

Portions of the visualizations and map contain 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 under 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. These duties may be considered management functions for purposes of evaluating threats to organizational independence under generally accepted government auditing standards. In our professional judgment, these duties do not affect our ability to conduct this independent performance audit of the Department's protection of managed pollinators (honey bees).

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. In general, Department officials agreed with our recommendations and indicated actions they would take to implement them.

Within 180 days after final release of this report, as required by Section 170 of the Executive Law, the Commissioner of the Department of Agriculture and Markets 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.

Agency Comments



**Agriculture
and Markets**

KATHY HOCHUL
Governor

RICHARD A. BALL
Commissioner

December 19, 2022

Nadine Morrell
Office of the State Comptroller
Division of State Government Accountability
110 State Street - 11th Floor
Albany, NY 12236-0001

Dear Ms. Morrell,

Thank you for the opportunity to comment on the draft audit report 2021-S-40, "Protection of Managed Pollinators." The Department of Agriculture and Markets is committed to protecting the health of honeybees and was instrumental in developing the New York State Pollinators Protection Plan in coordination with other state agencies. The Department's Division of Plant Industry strives to assist beekeepers in maintaining their colonies in a healthy condition. Through inspection, certification, education, and outreach to beekeepers, the Division works to ensure the health of honey bees. We are pleased that your audit found that our program is fulfilling its responsibilities to certify and conduct all required inspections for queens and nucleus colonies for sale.

Our response to the recommendations made are as follows:

OSC Recommendation 1 – Improve the Department's registration and apiary inspection efforts which may include but not be limited to:

- Increasing efforts to identify and register active apiaries;
- Incorporating identification of additional diseases, insects, and parasites that may be contributing to colony losses in the State;
- Officially establishing and publishing tolerance levels for diseases or parasites organisms and follow-up on treatment recommendations;
- Considering the use of alternative testing methods that will help preserve honey bee populations; and
- Expanding risk assessment criteria for targeting inspection activities

Response to Recommendation 1 - The Department agrees with the recommendation to improve its registration and inspection efforts.

Article 15 of the Agriculture and Markets law was amended December 23, 2021, to include Cooperative Honeybee Health Improvement Program, which established the apiary registration requirements. Because the new program involved a significant change in approach and the different degrees of receptiveness to registration among beekeepers, the Department initially

focused on education and outreach to the beekeeping community. The Department will continue to develop and expand the registration of active apiaries.

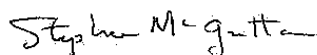
There is currently a zero tolerance for the most destructive disease – American Foulbrood. Other diseases and mites can be more difficult to establish a set tolerance because there are other factors to consider. Nevertheless, the Department will continue to work with its partners in the industry and other federal and state partners to identify additional diseases, insects and parasites that may be contributing to losses in the State.

The Department disagrees with OSC’s assumption that other testing methods would be more effective in preserving honeybee populations. However, the Department will continue to evaluate the efficacy of available testing methods.

OSC Recommendation 2 – Develop procedures to ensure honeybee shipments into the State are certified disease and parasite free and if warranted, consider reinspection upon entering the State.

Response to Recommendation 2 - The Department will continue to develop our relationships and procedures in working with other states to ensure that honeybees being moved between states are healthy.

Sincerely,



Stephen McGrattan

First Deputy Commissioner

Cc: Shelly Taleporos, Director of Internal Audit

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The audit team joined the Department for several inspections to become familiar with their process. The inspection shown below was to allow the beekeeper to sell nucs.



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