



Invasive Plant Management in Sitka National Historic Park

2024 Summary Report





ON THE COVER

Leaves of a European mountain ash (*Sorbus aucuparia*)

ON THIS PAGE

Top Left: Major trail in Sitka National Historic Park. Top right: An example of the totem poles that are a central feature of the park. Lower left: An interpretative sign and clearing near the historic fort site. Lower Right: Reed canary grass found at the northern boundary of the park.

Photography by NPS/Dustin Reed and Jordan Tanguay

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2024 Summary Report

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Abstract

This year marks the 11th year that the Alaska Invasive Plant Management Team (IPMT) has been represented in Sitka National Historical Park. The IPMT work was completed by two Biological Science Technicians from August 12 through 15th. Fieldwork this year consisted primarily of mapping invasive European mountain ash (*Sorbus aucuparia*). Limited surveys and removal of herbaceous plants were also conducted in the native plant garden at the visitor center. This work, as well as the herbaceous plant surveys that were completed in 2022, is to be used to set the groundwork for reestablishing efforts to manage and control invasive species in the park.

Acknowledgements

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List of Terms

AKRO Alaska Regional Office

EDRR Early Detection and Rapid Response

GNSS Global Navigation Satellite System

IPMT Invasive Plant Management Team

NPS National Park Service

PPE Personal Protective Equipment

SITK Sitka National Historic Park

Introduction

The Alaska Regional Invasive Plant Management (IPMT) is one of 17 established IPMT in the country. Each IPMT serves multiple parks within a distinct geographic region. They work to identify, develop, conduct, and evaluate invasive species removal projects and undertake appropriate native species restoration efforts. Due to the remote nature of many of the Alaska park units and the associated high cost of travel, the Alaska IPMT does not always have the funding to have a centralized crew that travels to each park in its region like a lot of the lower 48 teams. Historically the teams have worked cooperatively with partner parks to train existing park staff, partially fund seasonal employees, and support in park internship positions.

There are a variety of ways in which exotic plants pose a threat to our public lands. The structure of the native plant community becomes vulnerable by reducing species richness and diversity, changing pollinator relationships, and displacing available resources such as light, water and nutrients. This culminates into altered ecosystems by changing fire regimes, nutrient cycling, and hydrology (Levine 2003). Left unchecked invasive plants can have widespread effects on ecosystems. Humans play an important role in the global spread of non-native species, as well as provide disturbance areas where invasive species can infiltrate and thrive (Vitousek 1997).

Sitka National Historical Park (SITK) is a 107-acre park located on the western coast of Baranof Island within the Alexander Archipelago of southeast Alaska. Established in 1910, SITK is managed primarily for its historical significance as the site of the 1804 battle between the invading Russians and the native Tlingit people, and for its totem pole collection. The maritime climate at SITK is temperate with a high annual rainfall. Most of the park is second growth Sitka spruce and western hemlock forest but also contains the riparian ecosystem of the Indian river, a sedge and grass estuary meadow at the mouth of the river, as well as coastal shore and intertidal habitats. The area is frequented by nesting bald eagles, occasional brown bears, and spawning salmon.

Most national parks in Alaska are still relatively unaffected by exotic species when compared to those of the contiguous United States. This is due to remoteness, extreme boreal climates requiring strict adaptations, as well as less frequent anthropogenic disturbances (McKee 2005). However, SITK is unique among the Alaska park service units in that it is a small park surrounded by the urban environment of Sitka, has a mild climate, and was historically logged. The park is frequented heavily in the summer by cruise ship tourists and offers recreation opportunities for locals. These factors provide many opportunities for exotic plants to infiltrate park boundaries, and if management efforts are to be effective than SITK must work cooperatively with the surrounding federal, state, and private landowners.

Invasive plants are ranked based on their potential to cause habitat disruption. In Alaska the invasiveness ranking system includes at least 170 known invasive plants within the state and is based on a scale of 0 to 100; a plant ranked at 0 is not a threat to native ecosystems, while a plant ranked at 100 is a very high threat to native ecosystems. The invasiveness ranking system for invasive plants in Alaska is based on an initial climate screening and an evaluation of ecological impacts, biological characteristics and dispersal ability, ecological amplitude and distribution, and feasibility of control

(Carson et al. 2008). This allows for work treating invasive species to be prioritized towards the species that pose the greatest risk to ecosystems.

After a hiatus from 2012 to 2022 IPMT work resumed in SITK. In 2022 SITK was surveyed for invasive herbaceous plants. Due to limited availability of field staff no data on the European mountain ash (*Sorbus aucuparia*) was collected that year. In 2024 a Biological Science Technician from the regional IPMT team in Anchorage visited for a week to survey specifically for European mountain ash to better understand the state of the infestation after the long span between surveys. In 2024 limited surveys and treatments of herbaceous plants were done only when high priority species were noted, or as time allowed.

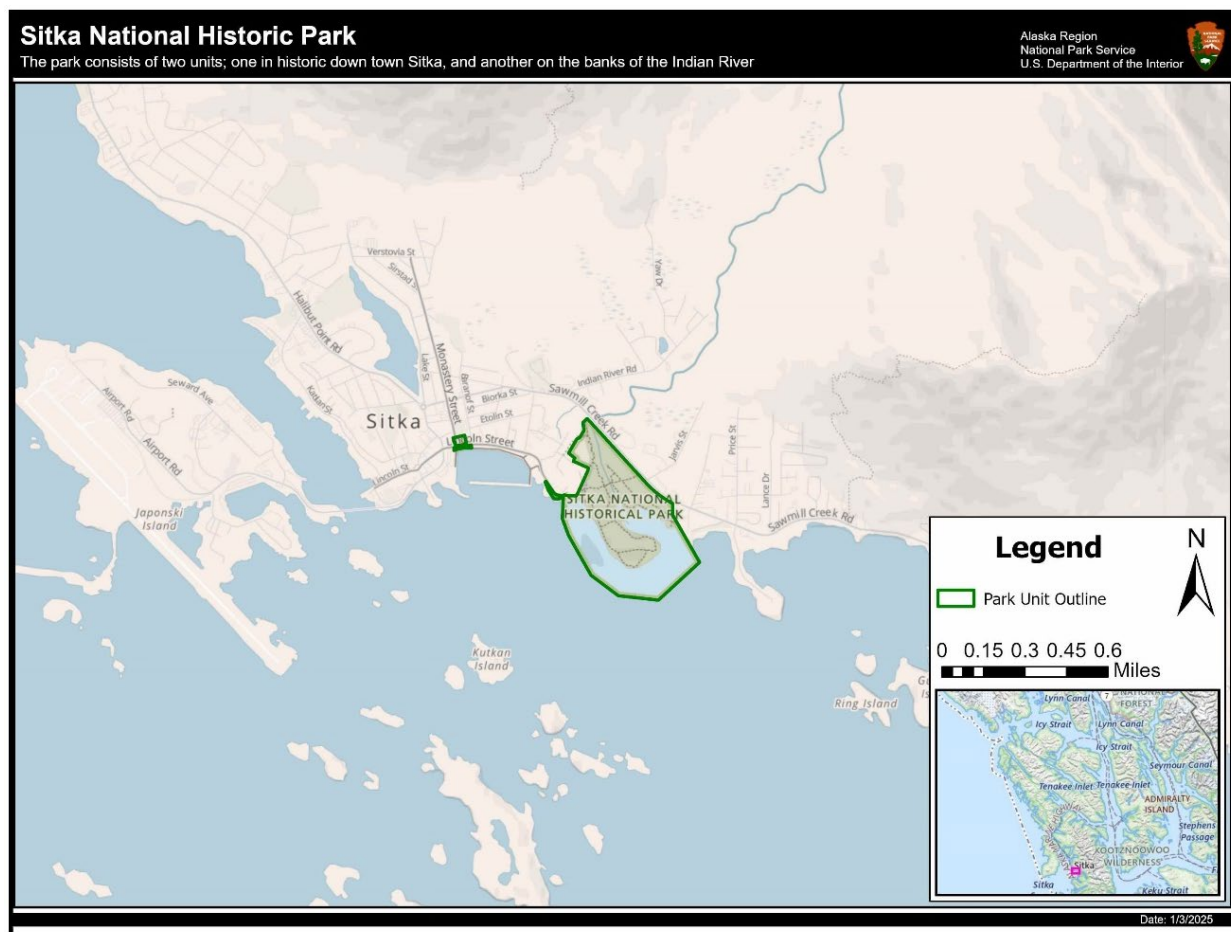


Figure 1. Sitka National Historic Park Boundary

Methods

Methods for data collection and processing followed the Alaska Invasive Plant Management Team 2024 Field Protocol (O'Brien 2024) and the Alaska Invasive Plant Management Team 2024 Office Protocol (O'Brien 2024) developed by the Alaska IPMT Program. These protocols outline methods for data collection in the field and processing data. We collected data using a Samsung Galaxy Tab Active 3 paired with a Leica GNSS Receiver. Pairing the tablet with the Leica enabled us to achieve better accuracy when mapping invasive plants in the field. Spatial data and attribute data was collected using Esri's ArcGIS Field Maps. Training was provided by the AKRO IPMT liaison in Anchorage from May 20-24th, 2024.

All work was completed between August 12th and 15th 2024 and was primarily collected by Dusty Reed, an AKRO biological science technician, with periodic assistance from Jordan Tanguay, the SITK biological science technician. Since the focus of this survey trip was to assess the state of the European mountain ash infestation, data was categorized as "single species surveys". In the situations when other invasive plant data was collected about herbaceous species in the park, it was categorized as "highest priority species survey". Identification of unknown plants was done using several reference books including Eric Hulten's *Flora of Alaska and Neighboring Territories*, and *Identification of Non-native Plants in Alaska* by Cortes Flagstad et al..

The European mountain ash surveyed was inventoried using actual stem count to ensure there is an exact accounting of the number of individuals present in the park. One individual tree (or "stem") was considered any tree trunk or group of tree trunks that originated from a single point. The populations of invasives found in the native plant garden by the visitor center were manually treated since this is a primary location of invasion and the populations were limited. Treated plants were placed into a plastic garbage bag and deposited in the trash headed to the Sitka Transfer Station.

Every official and unofficial trail in the park was surveyed as well as many of the areas between trails. Areas between trails were surveyed by intermittently walking into the untrailed open areas where it seemed likely there could be new tree recruitment. Any time a European mountain ash was found off the trail, the surrounding area was also searched to determine if there were any other trees in the vicinity.

Results

By the end of the week the entirety of the park had been surveyed for European mountain ash, and 203 mountain ash were found on park property. Of these, the majority were well established trees and only a small number of saplings were identified. Most of the mountain ash are large enough that they were likely too large to be removed when many European mountain ash were manually removed in 2012. At the north edge of the park, where Sawmill Creek Road crosses the Indian River, there is a small patch of reed canary grass (*Phalaris arundinacea*). This had been manually treated in 2012, but it is not believed that the treatment was successful. Historically there was another population at the upper parking lot of the visitor center, that was successfully treated in the past because there was no sign of it this year. Finally, the native plant garden at the visitor center was thinned, and many species were fully removed, but some of the more dominant species, like white clover (*Trifolium repens*), were not treated due to limited available time.

The European mountain ash populations continue to be the dominate invasive species in the park. In 2024 we identified 203 mountain ash in the park (Figure 2). These were predominately adult or large juveniles with few saplings and seedlings. In 2012 the park used a conservation corps crew to remove many smaller trees up to 4 inches in diameter using a weed wrench (Figure 3)(Bono, 2012). The areas where mountain ash was found is very similar between 2012 and 2024 which is expected given the small number of new growth.

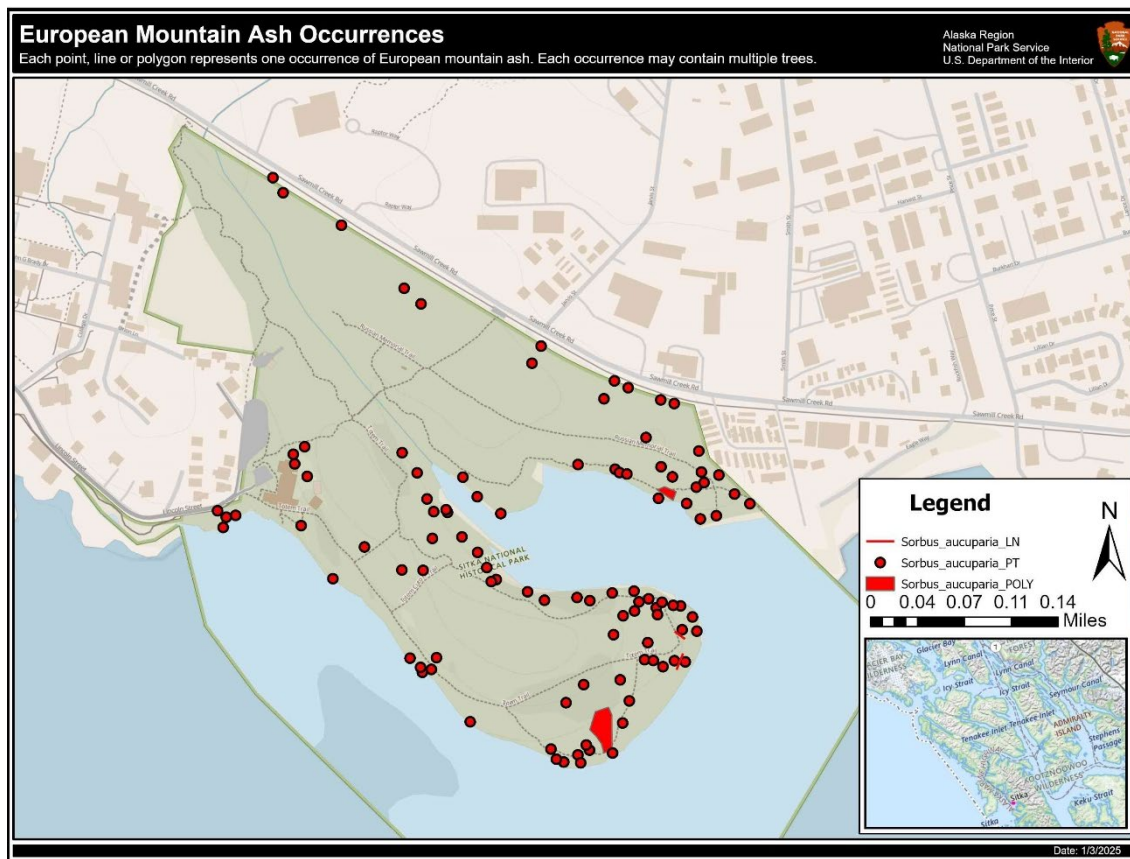


Figure 2. Locations of European mountain ash infestations in 2024

The reed canary grass at the northern boundary of the park was removed manually in 2012. In 2024 a well-established patch was present right next to the road on the River View Trail. This reestablishment of the reed canary grass demonstrates the extreme difficulty of manual removal of this highly invasive rhizomatous grass.

In 2024 at the native plant garden in front of the visitor center seven non-native species were found growing among the native plants. Of these, oxeye daisy (*Leucanthemum vulgare*), foxglove (*Digitalis purpurea*), and common groundsel (*Senecio vulgaris*) were all manually treated and removed. Common plantain (*Plantago major*), common dandelion (*Taraxacum officinale*) white clover, and creeping buttercup (*Ranunculus repens*) were not removed due to the high number of these individuals (Table 1).

Due to the limited time devoted to surveying for grasses and forbs fewer species were found this year than in 2012. It is unknown how the number and density of invasive species compared in 2024 to 2012. Of the species found this year though, all but common groundsel had been found in SITK previously.

Table 1: Invasive plants identified in SITK 2024

Plants Identified 2024	Plant Common Names	Management Action	Historically Present	Invasiveness Ranking
<i>Sorbus aucuparia</i>	European mountain ash	Inventory	Yes	59
<i>Digitalis purpurea</i>	Foxglove	Manual Removal	Yes	51
<i>Taraxacum officinale</i>	Common Dandelion	Inventory	Yes	58
<i>Leucanthemum vulgare</i>	Oxeye daisy	Manual Treatment	Yes	61
<i>Trifolium repens</i>	White clover	Inventory	Yes	59
<i>Ranunculus repens</i>	Creeping buttercup	Inventory	Yes	72
<i>Senecio vulgaris</i>	Common groundsel	Manual Treatment	No	36
<i>Plantago major</i>	Common plantain	Inventory	Yes	44
<i>Phalaris arundinacea</i>	Reed canary grass	Inventory	Yes	83

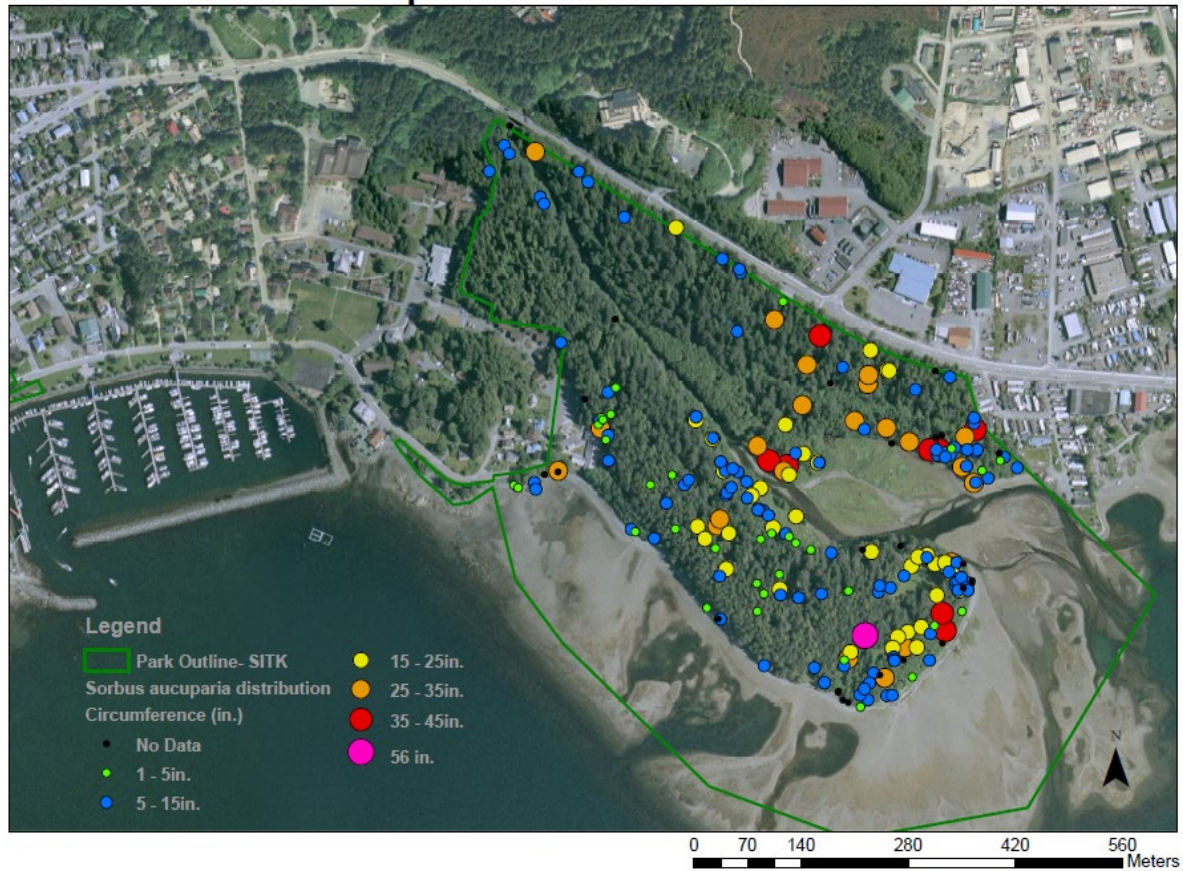


Figure 1. Individually mapped European mountain ash trees identified in 2012. In 2012 many trees smaller than 5 inches diameter at breast height were removed (Bono, 2012).

Discussion

2024 was a valuable second year to continue the re-establishment of the IPMT program in SITK. The work done this year provides insights into the scope of the European mountain ash infestation in the park. This in conjunction with the data collected in 2023 provides a good base to establish future monitoring of the invasives within the park and to create treatment plans to manage the infestations.

The largest infestation of invasive plants in the park continues to be European mountain ash. Of the 203 trees of this species identified within the park in 2024 most are well established trees that will need to be removed by felling with chainsaws. We recommend this be the area of priority for invasive plant management within the park. Removing this large number of trees within such a heavily used park will pose significant logistical challenges and require extensive planning to implement. We recommend that the park and the regional IPMT team begin working immediately to create a treatment plan for these trees. In addition to the challenge of getting the appropriately trained individuals involved to do the physical tree removal, it would be valuable to have a comprehensive map of each individual tree in the park like the one created in 2012. This would help to prioritize work areas for tree removal.

Another area of concern is the population of reed canary grass at the northern boundary of the park. This will likely require herbicide treatments to effectively remove, but its spread can be reduced via tarping. We recommend that SITK staff tarp the reed canary grass patch at the beginning of the growing season in 2025 and maintain that tarping during all subsequent summers until it is possible to get an herbicide applicator to the park to treat the population.

The native plant garden at the visitor center continues to be an area of concern for the establishment of new invasives into the park. There are numerous ornamentals on the neighboring yards (some of which are known invasive species), and the disturbed nature of the garden provides opportunity for new species to move into the park. Keeping this area free of invasives (not including the several well-established species discussed below) can be done in less than a day. This both limits the potential for the establishment of new species into the park, but also keeps the area as a valuable educational resource for visitors. It may be valuable to add more interpretative signage discussing the native plants in the area, and potentially even some signage about the challenges of controlling invasive species within the park to raise more awareness with visitors.

The well-established species in the park (creeping buttercup, white clover, common plantain, common dandelion) are widespread within the park. While they should not be ignored, these are all species with lower invasiveness rankings and due to their level of establishment will require a significant effort to remove them. Because of this we recommend that these are seen as lower priority for treatment. If we can get staff within SITK to be fully trained in invasive plant ID and herbicide use it would be possible and recommended to treat these populations as time and weather allow.

It is important to note that since the focus of surveys conducted in 2024 was to inventory the extent of the European mountain ash population, inventory of invasive grasses and forbs was limited. There are many species that were found in 2012 and before that may still be present within the park but

were not seen this year due to the limited nature of surveying. Efforts should be made to complete more thorough surveys of all invasive plants within the park to better track these populations over time.

While there are several challenges with managing nonnative plants in SITK, the small size of the park means that doing full treatments across the entire park is much more feasible than at a larger park. We recommend that SITK use this to their advantage and continue to re-establish the IPMT presence in the park and make a coordinated effort to keep invasive species populations under control.

Literature Cited

- Bono, G.L. 2012. Invasive and Exotic Plant Species Management for Sitka National Historical Park: 2012 Summary Report. Natural Resource Data Series NPS/SITK/NRDS—2012. National Park Service, Fort Collins, Colorado.
- Carlson, M.L., I.V. Lapina, M. Shephard, J.S. Conn, R. Densmore, P. Spencer, J. Heys, J. Riley and J. Nielsen. 2008. Invasiveness ranking system for non-native plants of Alaska. USDA Forest Service. R10-TP-143.
- Flagstad, L., Cortes-Burns, H., and Greenstein, C. 2019. Identification of Non-native Plants in Alaska. Alaska Natural Heritage Program, University of Alaska Anchorage.
- Hultén, E. 1968. Flora of Alaska and Neighboring Territories: A Manual of The Vascular Plants. Stanford University Press, Stanford, CA.
- Levine, J.M. *et al.* 2003. Mechanisms underlying the impacts of exotic plant invasions: *in Proceedings of the Royal Society London Biological Sciences*. 270: 775–781.
- McKee, C. 2005. Exotic Plants in Alaska Parks. Available from http://www.uaf.edu/files/snras/MP_05_06.pdf (Accessed Sept. 2012)
- O'Brien, A. 2024a. Alaska invasive plant management team 2024 field protocol. 2024. U.S. Department of the Interior, National Park Service, Anchorage, Alaska.
- O'Brien, A. 2024b. Alaska invasive plant management team 2024 office protocol. 2024. U.S. Department of the Interior, National Park Service, Anchorage, Alaska
- Rice, B. (2024). Alaska Region Invasive Plant Management Plan. In *Nps.gov*. National Park Service. <https://parkplanning.nps.gov/document.cfm?documentID=24597>
- Vitousek, P.M. *et al.* 1997. Introduced Species: A Significant Component of Human Caused Global Change. *New Zealand Journal of Ecology*. 21:1-16.