Invasive Plant Monitoring
Corridors of Invasion – Early Detection Monitoring
Broward, Hendry, Miami-Dade, and Palm Beach counties, Florida

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FINAL REPORT
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Introduction

From June to August 2022, The Institute for Regional Conservation (IRC) implemented PO #4500135937, *Corridors of Invasion – Early Detection Monitoring*, for the South Florida Water Management District (District). The goal of the *Corridors of Invasion* (COI) project was to detect new and revisit prior observations of emerging invasive plant species and infestations along identified routes to collect data to assist with District planning and decision making. This was the fourth year of the project. The specific monitoring objectives included:

1. Detect new species of exotic plants along COI (i.e., roads, canals, campgrounds, and boat launches.), and revisit infestations recorded in 2019.
2. Collect data to be used to determine the distribution, population status, and trends of infestations along the identified COI.

This report summarizes methods and findings and builds on suggestions for an expanded Early Detection Monitoring Program on District land in the future. In 2022, routes include driving routes only. (Fig 1.)

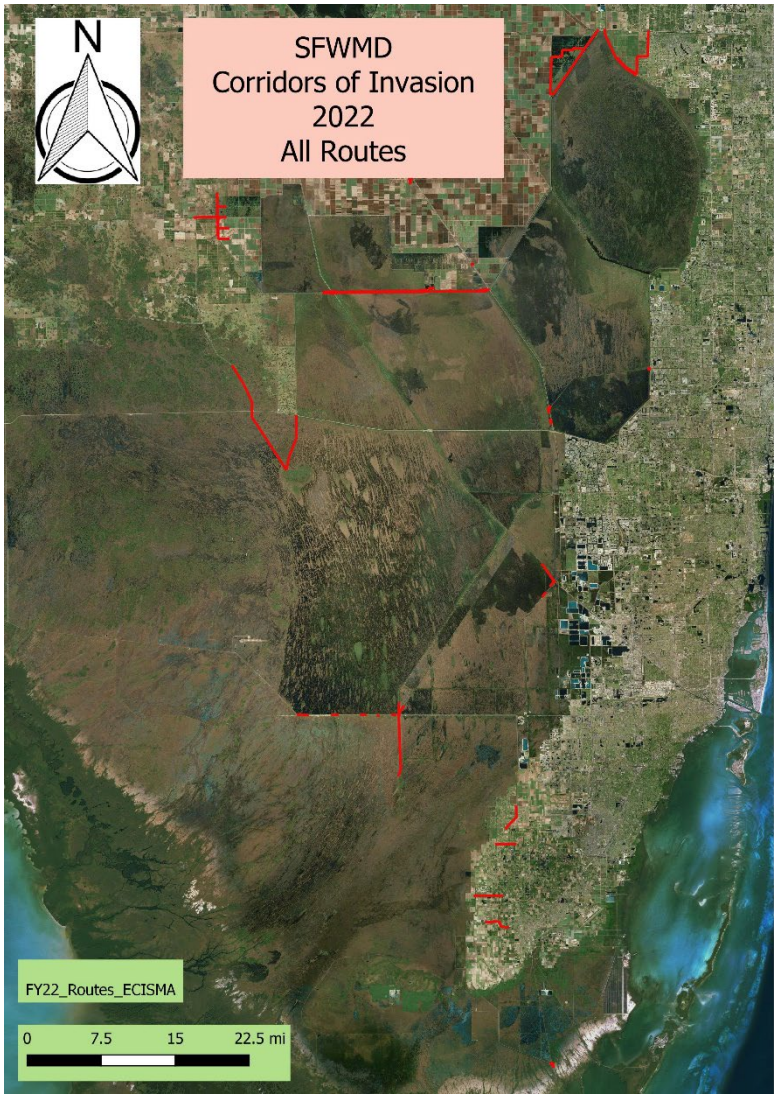

Figure 1: 2022 routes in red.

Methods

Driving routes (~110.5 miles in Palm Beach, Broward, Hendry, Collier, and Miami-Dade counties) were completed. Only minor walking was done on some driving routes. We were not able to complete the northwesternmost reaches of L28 Interceptor due to access issues reported to the District.

George Gann acted as Botanist throughout the project, assisted by Michelle Smith (logistics, GIS, data processing, report writing), and Egdomilia Gann, Kelly McLoughlin, and George Guillen as drivers. As per the protocol, the Botanist searched for a select group of invasive exotic plants identified as of interest to the District for each region (North and Central, South), as well as other unusual species or occurrences as determined by the Botanist. The latter species could include exotic species not on either the "common" or "concern" list for the county being surveyed, and disjunct or important occurrence of "common" species. Extralimital native species spreading from cultivation outside of native range were not documented in 2021 or 2022.

Waypoints and route tracks were recorded on a Garmin Oregon 650t GPS unit, using WGS84 reference datums. For driving routes, Field of View (FOV) average estimates were recorded at 1-mile intervals using the vehicle odometer and recorded as Reaches. Along some Reaches, long FOVs (20 m+) were interrupted by very short FOVs (e.g., 2-3 m) on a regular basis, and these were averaged to the best of our ability. In some cases, the FOV might appear long (e.g., over the top of sawgrass or cattails), but we estimated the FOV based on where a generally clear view of the lower vegetation ended.

When a species of concern was encountered, a variety of data were recorded, including locality data, approximate size of infestation, and at least one photograph. Herbarium vouchers were to be collected if they documented a new county occurrence.

2022 Findings

Infestations ranged from single plants within a 3 x 3 meter area to widespread infestations along several miles of right of way or estimated to be >1 km^2 in extent. As in 2019 through 2021, most infestations were in highly disturbed areas, but some were spreading into or along the edges of adjacent wetlands dominated by native species. Species of concern were recorded in all counties, and on all routes except STA2 and L31N. A total of 77 observations were made. No herbarium vouchers were collected. In addition to 12 species of concern identified by the District, 10 additional taxa were recorded of concern to the Botanist. See Table 1 for a summary comparison of data collected from 2019 to 2022. The following summarizes the species recorded in 2022.

<u>Species of Concern identified for at least one region by the District and counties where recorded:</u>
Ardisia elliptica: Miami-Dade County
Corymbia torelliana: Hendry County
Cyperus alopecuroidea: Hendry County, Palm Beach County
Cyperus blepharoleptos: Broward County, Hendry County
Chamaedorea seifrizii: Miami-Dade County
Flueggea virosa: Miami-Dade County
Heteropogon contortus: Broward County, Miami-Dade County
Imperata cylindrica: Broward County, Hendry County, Palm Beach County
Lygodium microphyllum: Miami-Dade County
Melaleuca viminalis: Broward County
Neyraudia reynaudiana: Broward County, Palm Beach County

Scleria lacustris: Palm Beach County

Additional species recorded by the Botanist:
Cantinoa americana: Broward County, Palm Beach County
Cantinoa mutabilis: Broward County
Ficus microcarpa: Palm Beach County
Macroptilium atropurpureum: Palm Beach County
Paspalum arundinaceum: Miami-Dade County, Palm Beach County
Pimenta dioica: Miami-Dade County
Tabebuia heterophylla: Broward County, Miami-Dade County
Turnera ulmifolia: Broward County
Vitex trifolia: Broward County
Unknown dicot vine: Miami-Dade County

Year	2019	2020	2021	2022
Records	67	93	39	77
Vouchers	17	13	0	0
New county records	5	11	0	0
District species	13	11	11	12
Additional species	14	18	6	10

Table 1: Summary of results, 2019-2022.

Discussion

Floristics:
Of the 12 species recorded by us and identified by the District as Species of Concern for at least one region, all but two were Species of Concern project wide*; Neyraudia reynaudiana* is common in Miami-Dade County but spreading to the north, and *Corymbia torelliana* was identified as a Species of Concern in the Central,South region but is spreading from cultivated plants in Hendry County and was recorded there. Some species recorded in prior year were removed from the Species of Concern lists and were not recorded (e.g., *Hemalthria altissima*). In 2022, we did not record *Euploca procumbens* nor *Ruellia ciliatiflora* due to their widespread and ruderal nature. Although *Cantinoa americana, Cantinoa mutabilis,* and *Paspalum arundinaceum* appear mostly confined to disturbed areas, they all show signs of potential invasiveness and are worthy of recording at this time. In 2022, *Macroptilium atropurpureum*, *Pimenta dioica*, and *Turnera ulmifolia* were recorded for the first time. Due to its distribution, abundance, and ruderal nature, we recommend removal of *Heteropogon contortus* from the COI list.

Major Infestations:
Cantinoa americana and *Heteropogon contortus* were naturalized along miles and miles of levee in Broward and Palm Beach counties; some populations were contiguous with those mapped in 2020 or 2021, and some were newly recorded. Numerous patches of *Imperata cylindrica* were recorded in Broward, Hendry, and Palm Beach counties, and these are expanding. *Neyraudia neyraudiana* continues to spread along the L28 Interceptor. *Paspalum arundinaceum* is spreading aggressively along the L4L5 and C-111 routes.

Notes About Management and Treatment of Invasives

Continuing discussion from prior years, it seems highly likely that several species, including *Cantinoa americana, Heteropogon contortus*, and *Imperata cylindrica*, are being moved around by District mowers. In 2022, we saw little evidence of treatment of infestations recorded in 2019. Where projects routes ran along one side of a canal, we recommend treatment crews survey and treat both sides of any canal where an infestation was recorded.

Additional Discussion for Future Projects

A few issues remain regarding the SOW. In particular, the SOW asks the observers to record the FOV as if they can see everything in all layers up to 20 m. Yet the discussion in the text states that even for walking surveys in open habitats FOV for plants <1 in height is only 10 m, and plants <0.5 m is 1 m. In practice, we recorded the FOV up to the distance where the view became generally obstructed (even if by *Cladium* or *Typha*), but our ability to see herbaceous weeds varied widely.

Acknowledgements

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