

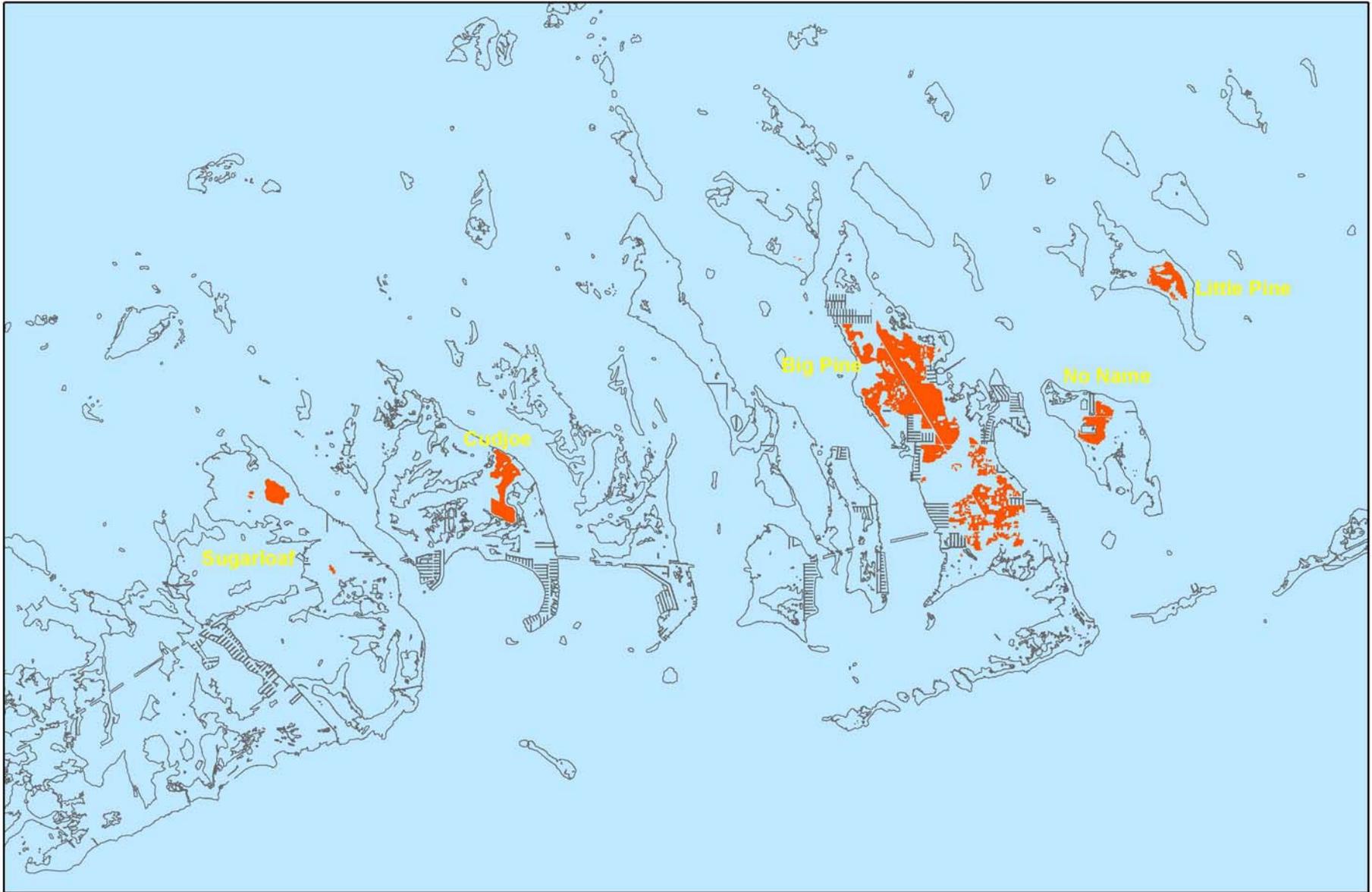
Rare Pine Rockland Plants of Big Pine Key

Keith A. Bradley

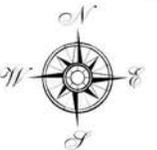
The Institute for Regional Conservation

February 9, 2006

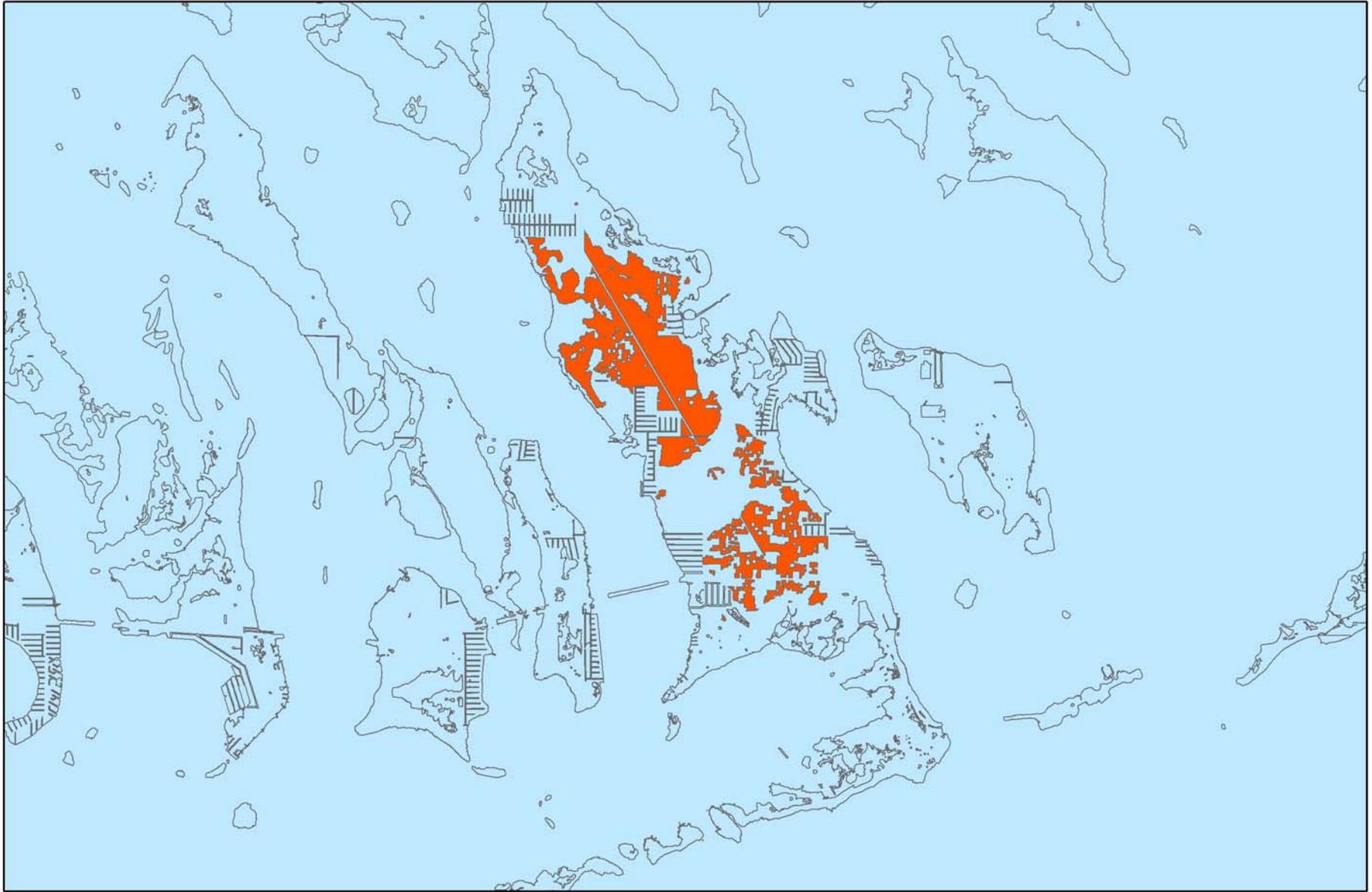
Pine Rockland in the Florida Keys



Map by Keith A. Bradley
The Institute for Regional Conservation
February 2006

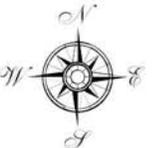


Pine Rockland on Big Pine Key



There are 582 hectares of pine rockland on the island (ADID)
There used to be 1049 hectares (Folk 1991)

Map by Keith A. Bradley
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Rare Plants of Big Pine Key Pine Rocklands

- Federal Candidates
 - *Argythamnia blodgettii* (Blodgett's wild mercury)
 - *Chamaesyce deltoidea* subsp. *serpyllum* (Wedge sandmat)
 - *Chamaecrista lineata* var. *keyensis* (Big Pine partridge pea)
 - *Linum arenicola* (Sand flax)
- IRC Critically Imperiled
 - *Caesalpinia pauciflora* (Fewflower holdback)
 - *Catesbaea parviflora* (Dune lilythorn)
 - *Dodonaea elaeagnoides* (Smallfruit varnishleaf)
 - *Evolvulus grisebachii* (Grisebach's dwarf morning glory)
 - *Strumpfia maritima* (Pride-of-Big-Pine)

Rare Plants of Big Pine Key's Pine Rocklands



Argythamnia blodgettii
(Blodgett's wild mercury)

Know from Miami-Dade County and other
populations in the Florida Keys

Rare Plants of Big Pine Key's Pine Rocklands



Chamaesyce deltoidea subsp. *serpyllum*
(Wedge sandmat)

Only found on Big Pine Key



Rare Plants of Big Pine Key's Pine Rocklands



Chamaecrista lineata var. *keyensis*
(Big Pine partridge pea)

Known from Big Pine Key, Cudjoe Key, and
Lower Sugarloaf Key.

Rare Plants of Big Pine Key's Pine Rocklands



Linum arenicola
(Sand flax)

Known from Miami-Dade County and other
populations in the Florida Keys

Monitoring Rare Organisms on Big Pine Key



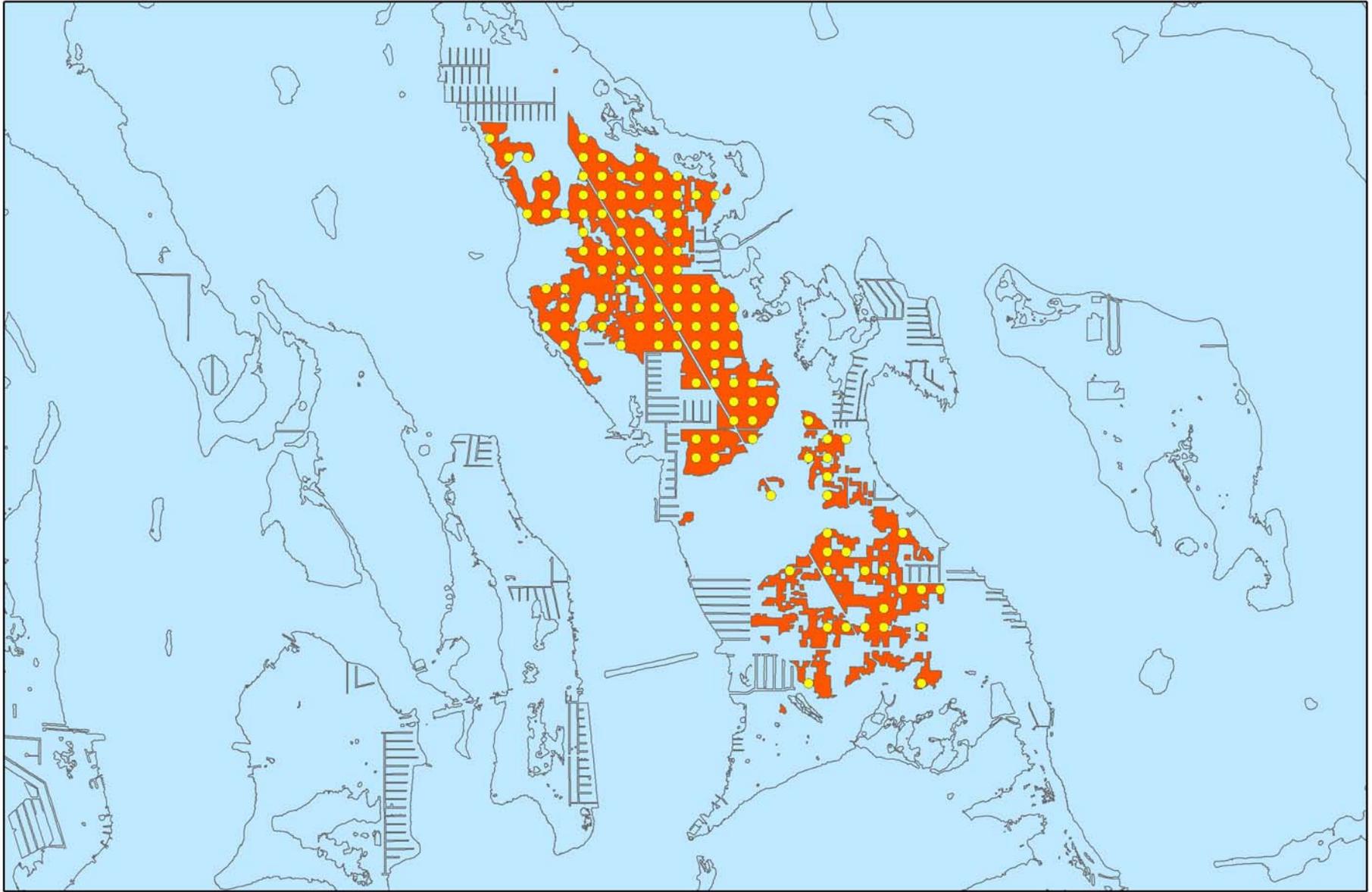
Monitoring Rare Plants on Big Pine Key

Besides the big warm & fuzzy things, we need to make sure that the ecosystem and all of its rare organisms are being managed.

We developed a project to gather data on the current status of three plant species that are candidates for listing under the US Endangered Species Act:

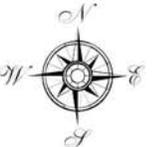
- *Chamaesyce deltoidea* subsp. *serpyllum* (Wedge sandmat)
- *Chamaecrista lineata* var. *keyensis* (Big Pine partridge pea)
- *Linum arenicola* (Sand flax)

Plot Locations on Big Pine Key

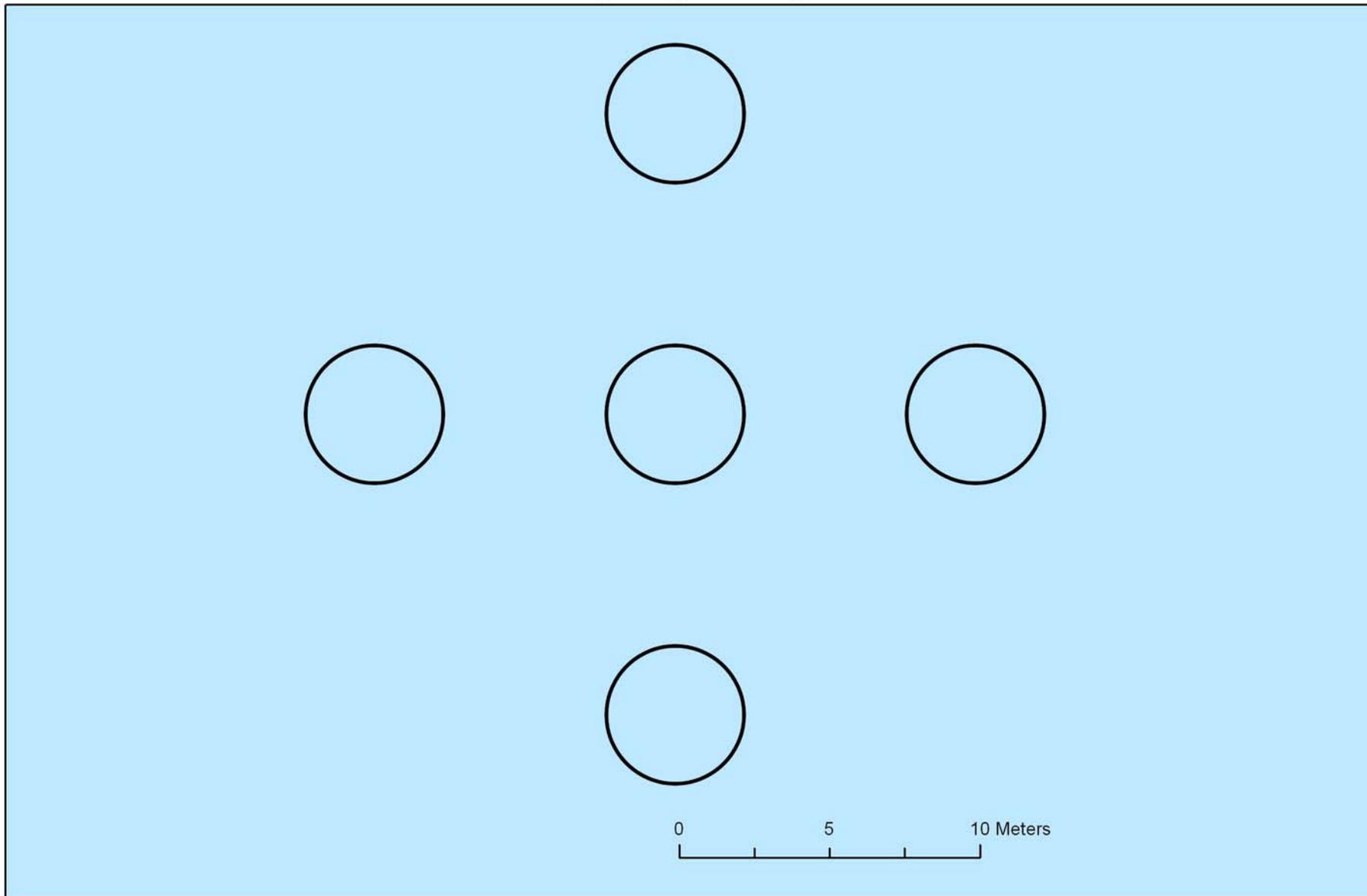


Plots were placed every 200 meters in publicly-owned pine rockland (n=123)

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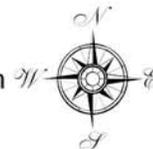


Sampling Design

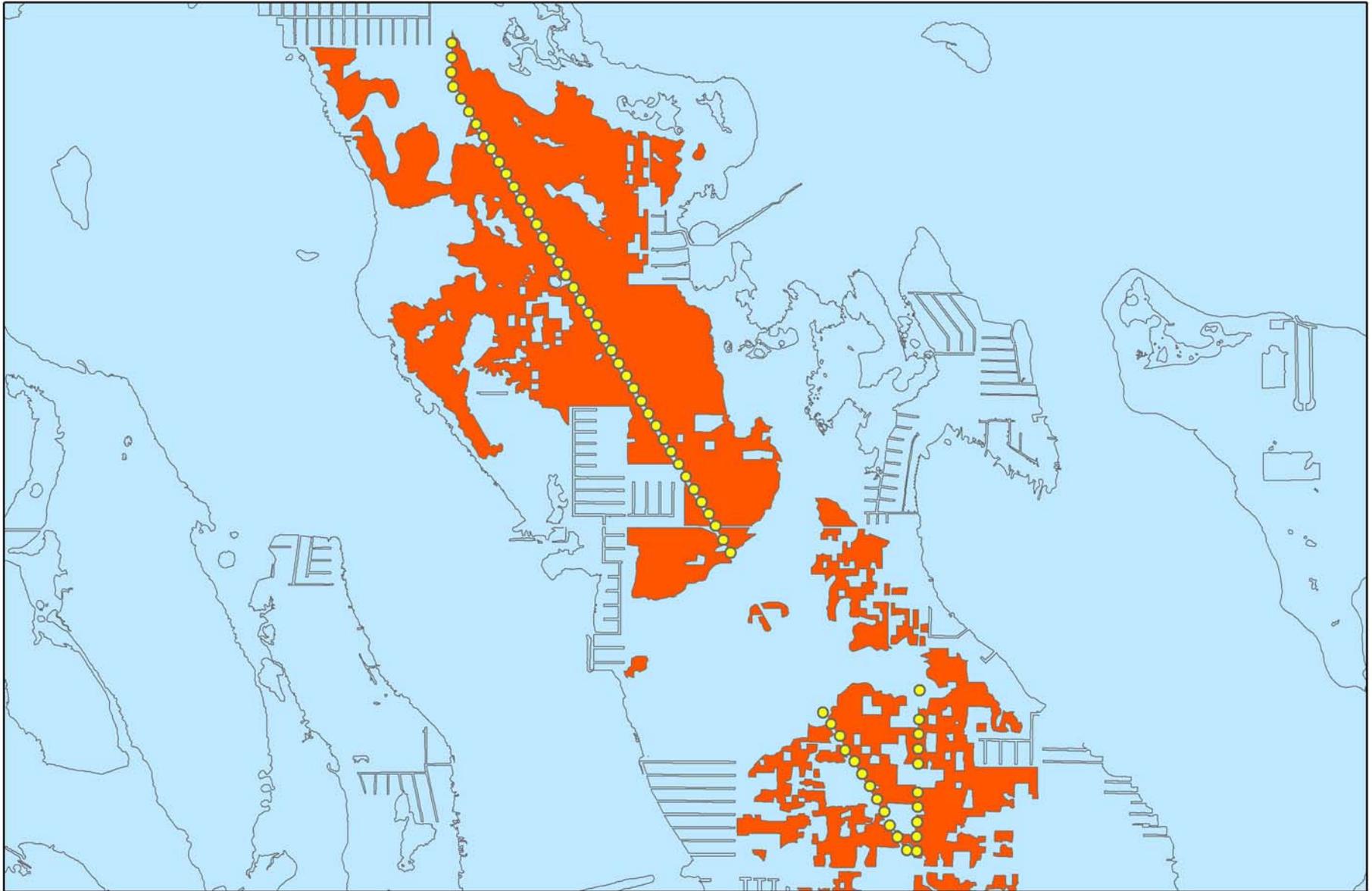


At each sample location 5 plots with radius of 2.5m were established

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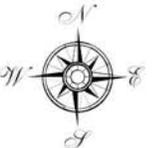


Roadside Plot Locations on Big Pine Key



Plots were placed every 100 meters
next to pine rockland (n=128)

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Data Collection

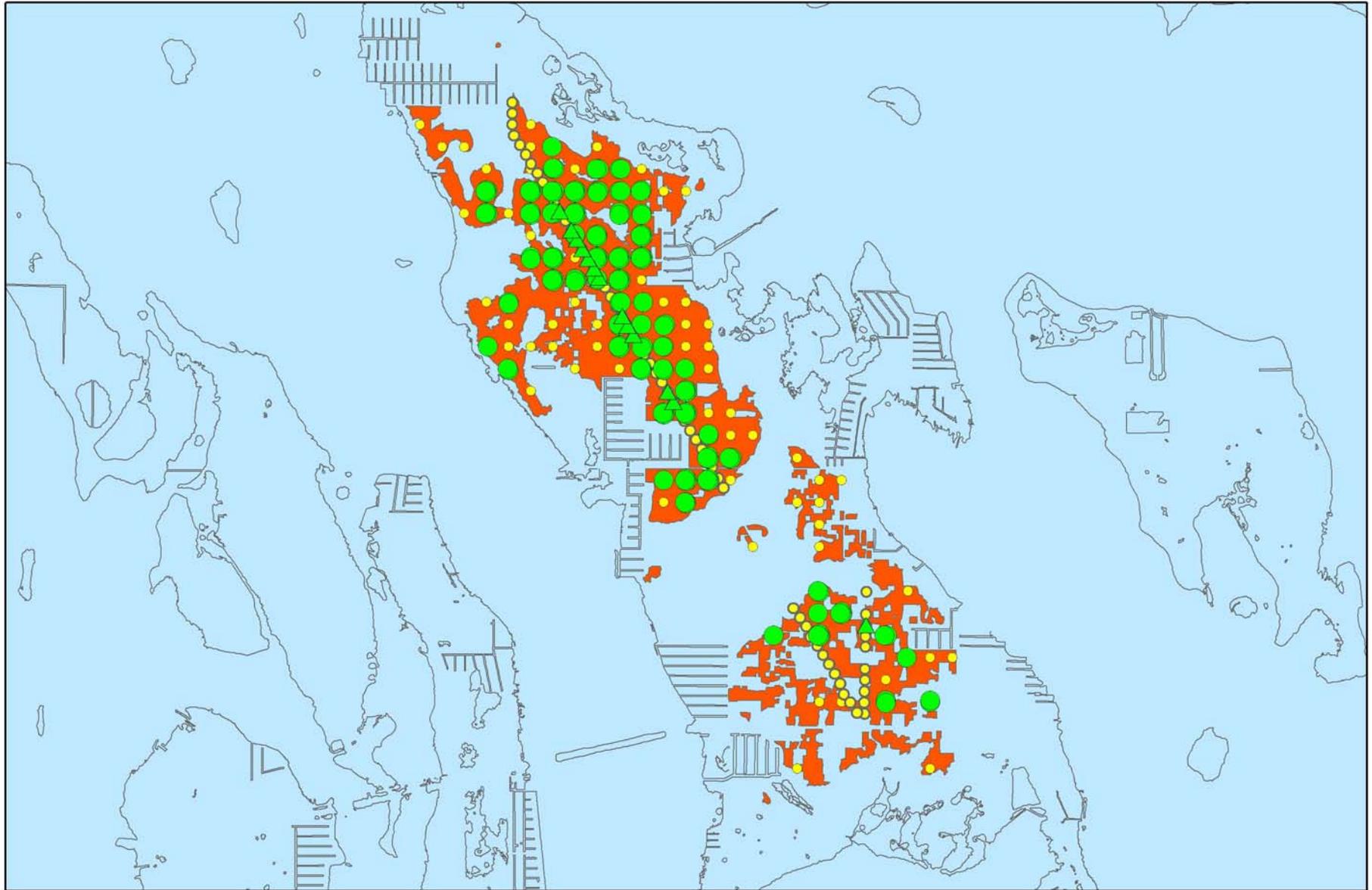
- Counted individuals of each rare plant (both Federal Candidates and IRC Critically Imperiled)
- Recorded vegetative cover of each plant species in each plot
- On each side of road shoulder counted rare plants in a 5 m wide strip

Results

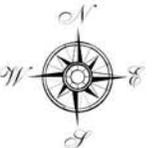
Chamaecrista lineata var. *keyensis*

- Surveyed 584 plots (1.15 ha)
- Recorded 1,903 plants in 197 plots (33.7%)
- Density was 1,659/ha (+/- 337)
- On roadsides found 53 plants in 13 plots (10%), density = 82/km (+/- 58.2)
- Island-wide there are between 632,000 and 955,000 individuals

Chamaecrista lineata var. *keyensis* Distribution



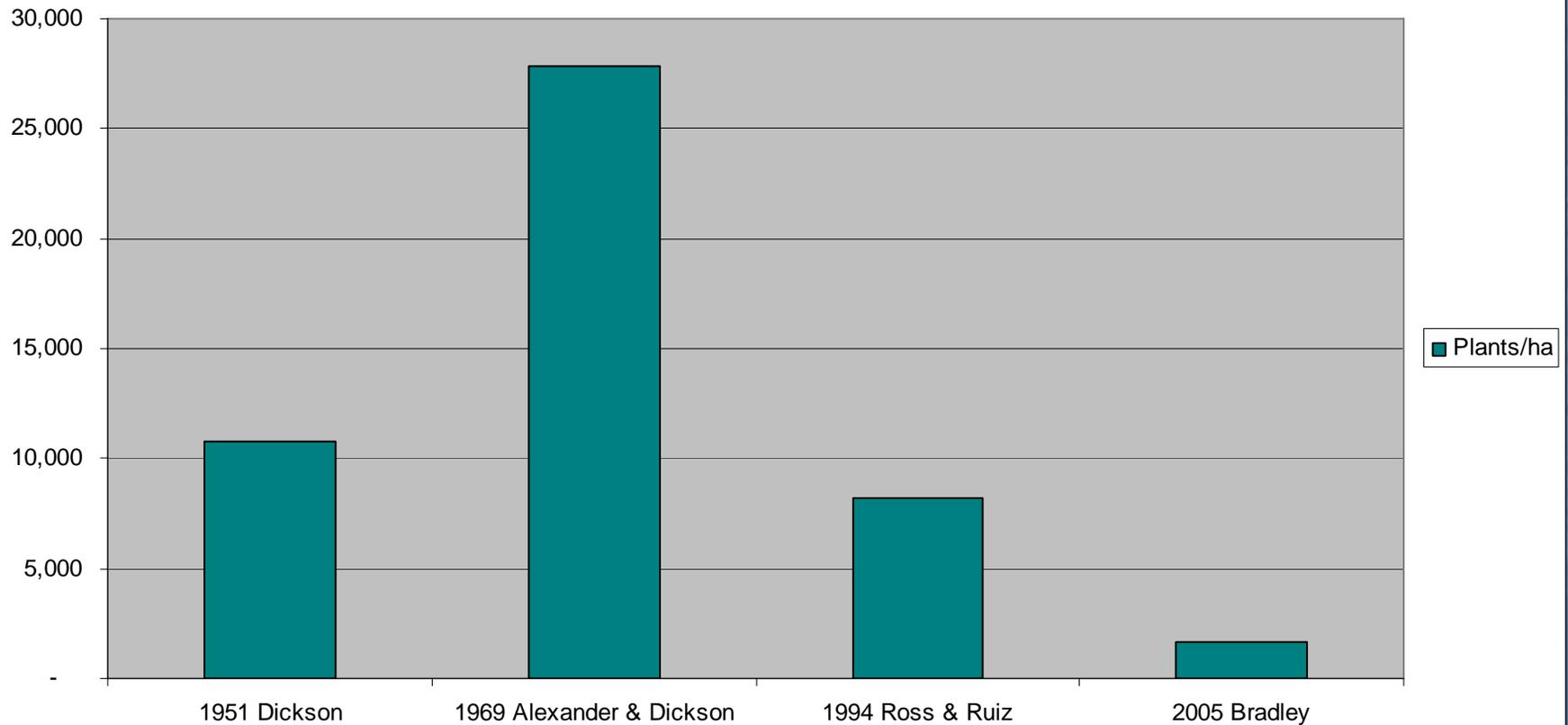
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Results

Chamaecrista lineata var. *keyensis*

Chamaecrista lineata var. *keyensis*
Densities by Year

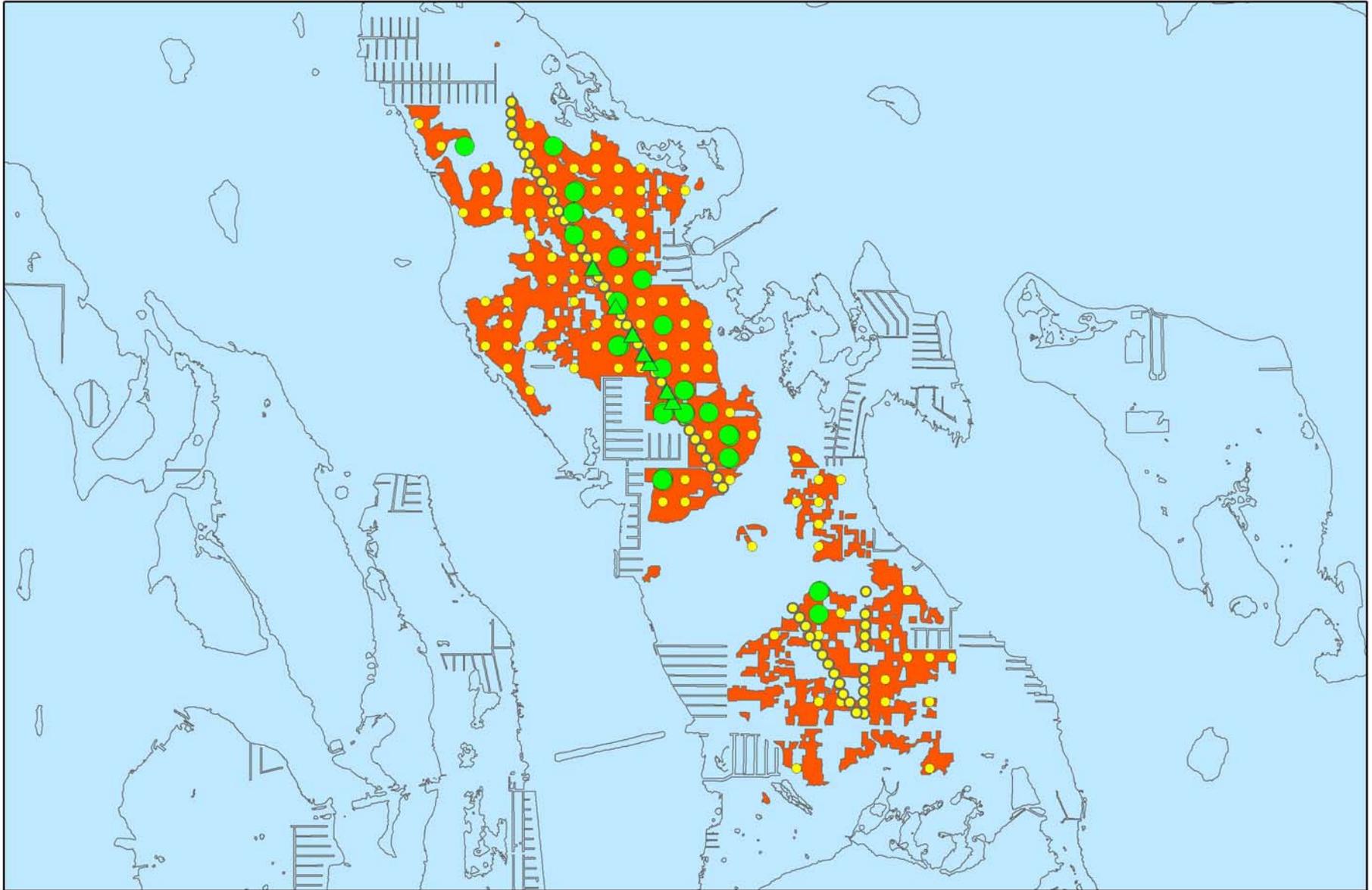


Results

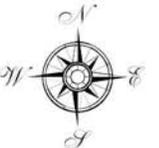
Chamaesyce deltoidea subsp. serpyllum

- Surveyed 584 plots (1.15 ha)
- Recorded 785 plants in 40 plots (5.1%)
- Density was 735/ha (+/- 320)
- On roadsides found 191 plants in 8 plots (6.3%), density = 3,820/km (+/- 3,654!)
- Island-wide there are between 174,000 and 488,000 individuals

Chamaesyce deltoidea subsp. *serpyllum* Distribution



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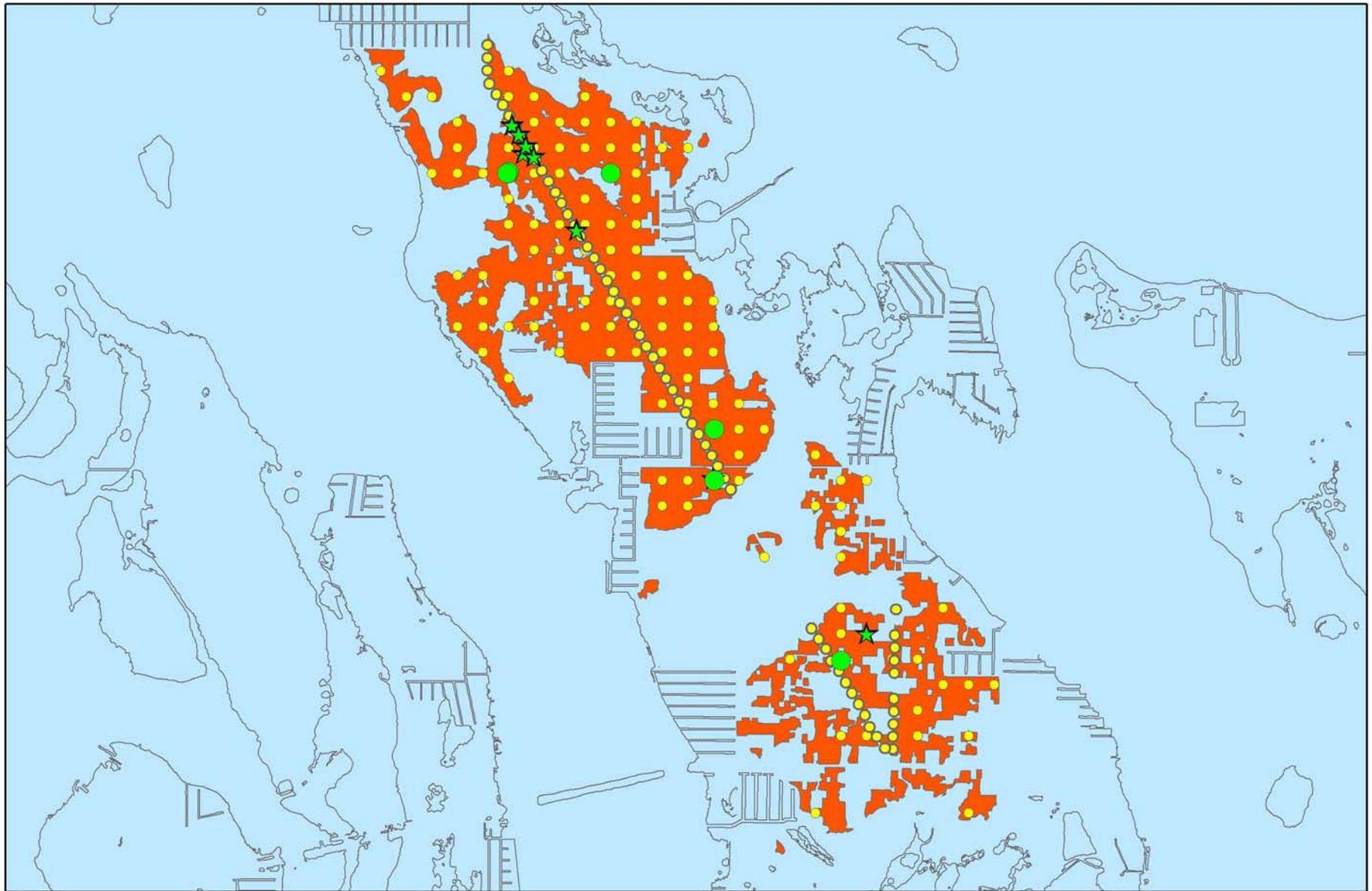


Results

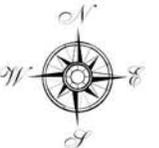
Linum arenicola

- Surveyed 584 plots (1.15 ha)
- Recorded 33 plants in 7 plots (1.2%)
- Density was 28.8/ha (+/-32.4 – very high)
- On roadsides found no plants in plots
- Found 8 colonies outside of plots
- Island-wide there may be ca. 13,500 plants, but really recorded too infrequent to tell

Linum arenicola Distribution



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Discussion

- *Chamaecrista* may be declining, but we need continued monitoring. It is now at a much lower density than historically reported. This is probably due to recent storms, changes in fire regime, forest fragmentation, and an artifact of different sampling designs
- *Chamaesyce* may also be at lower densities but there is little historical data
- *Linum* is at much lower densities than expected and in the Keys is now mostly restricted to disturbed areas
- Only *Chamaecrista* was seen in fire suppressed areas, and always at low densities

