



Pine Tortoise Scale threatens Pine Yards in the Turks and Caicos Islands

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Photographs Michele Sanchez, Martin Hamilton and Marcella Corcoran, unless otherwise stated.

Overview

- Pine Tortoise Scale – origin, biology
- TCI Pine Yards and infestation levels
protocols
preliminary data
- Conclusions

Pine tortoise scale -
***Toumeyella parvicornis* (Cockerell)**
Order Homoptera, family Coccidae

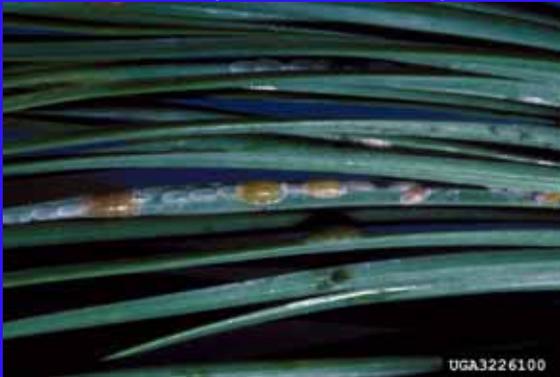
Adults



Male and female pine tortoise scale R. Scott Cameron, International Paper, Bugwood.org

Typical Life Cycle (East of the Rockies, USA)

Adults (Jan-June)



Male and female pine tortoise scale R. Scott Cameron, International Paper, Bugwood.org

Eggs (June)

Crawlers (June-July)

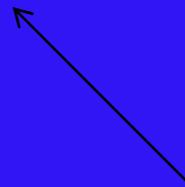


Young nymphs on young shoots. Thérèse Arcand, Natural Resources Canada, Canadian Forest Service, Laurentian Forestry

Nymphs (July)



Centre wax covering nymph bodies. Thérèse Arcand, Natural Resources Canada, Canadian Forest Service, Laurentian Forestry



Altered life cycle

Temperate regions

Distinct seasons, cold winters



Adult Female hibernate
inside bark



One generation a year

Tropical Regions

Hot climate all year round



Adult female active all year

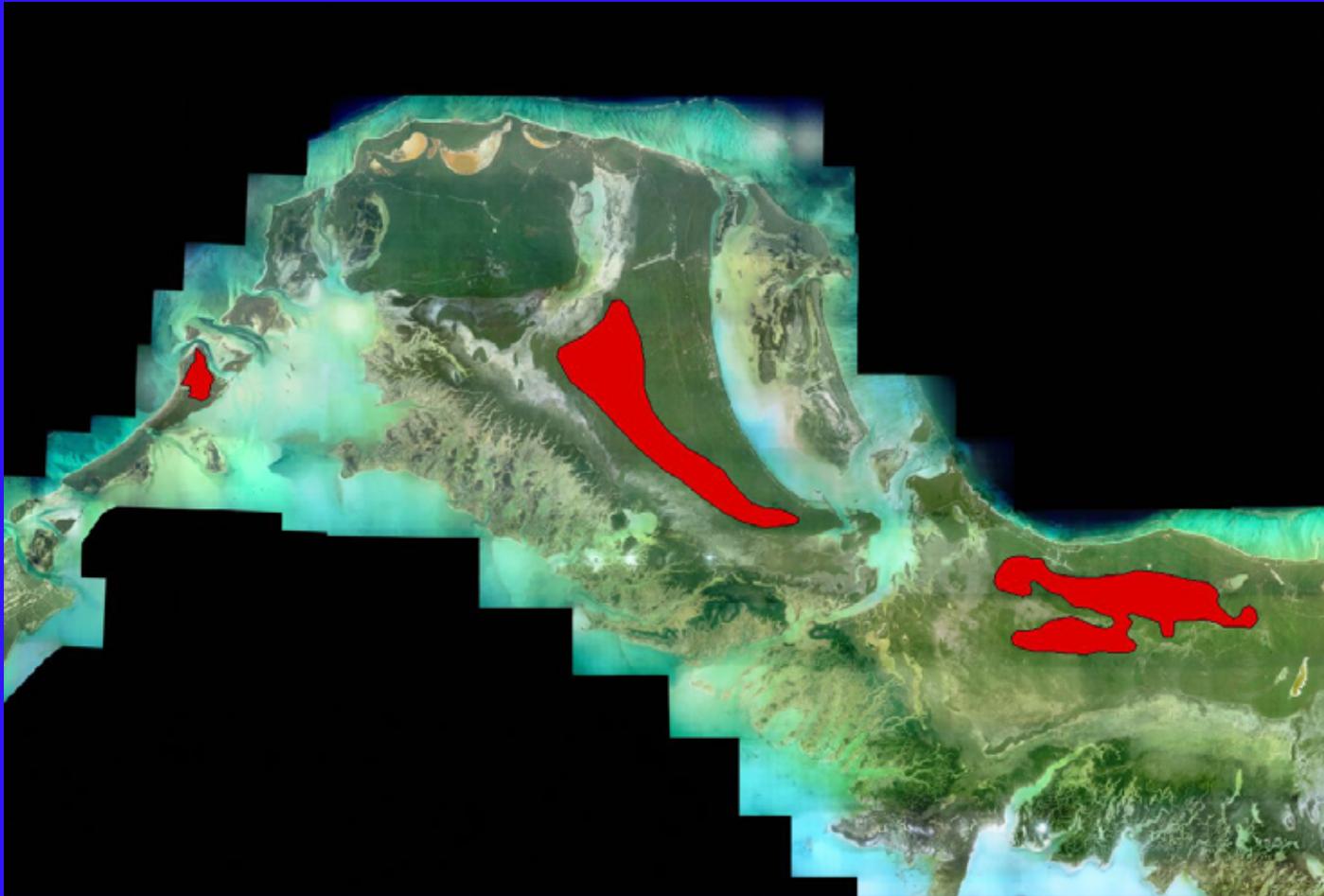


Several generations per
year

Damage

- Reduced vigour
- Impaired reproduction/recruitment
- Die back/Death
- Reduced photosynthesis (sooty mould)

Pine Yards TCI



Monitoring

Data gathering started in 2006-2007 in Pine Cay, Middle Caicos and North Caicos. Parameters recorded included:

GIS data

Scale infestation level

Canopy damage

Sooty mould coverage

Cone development

Recruitment

Sooty mould



Recruitment



Martin Hamilton
and Bryan
Manco
observing
seedlings,
Middle Caicos

Findings

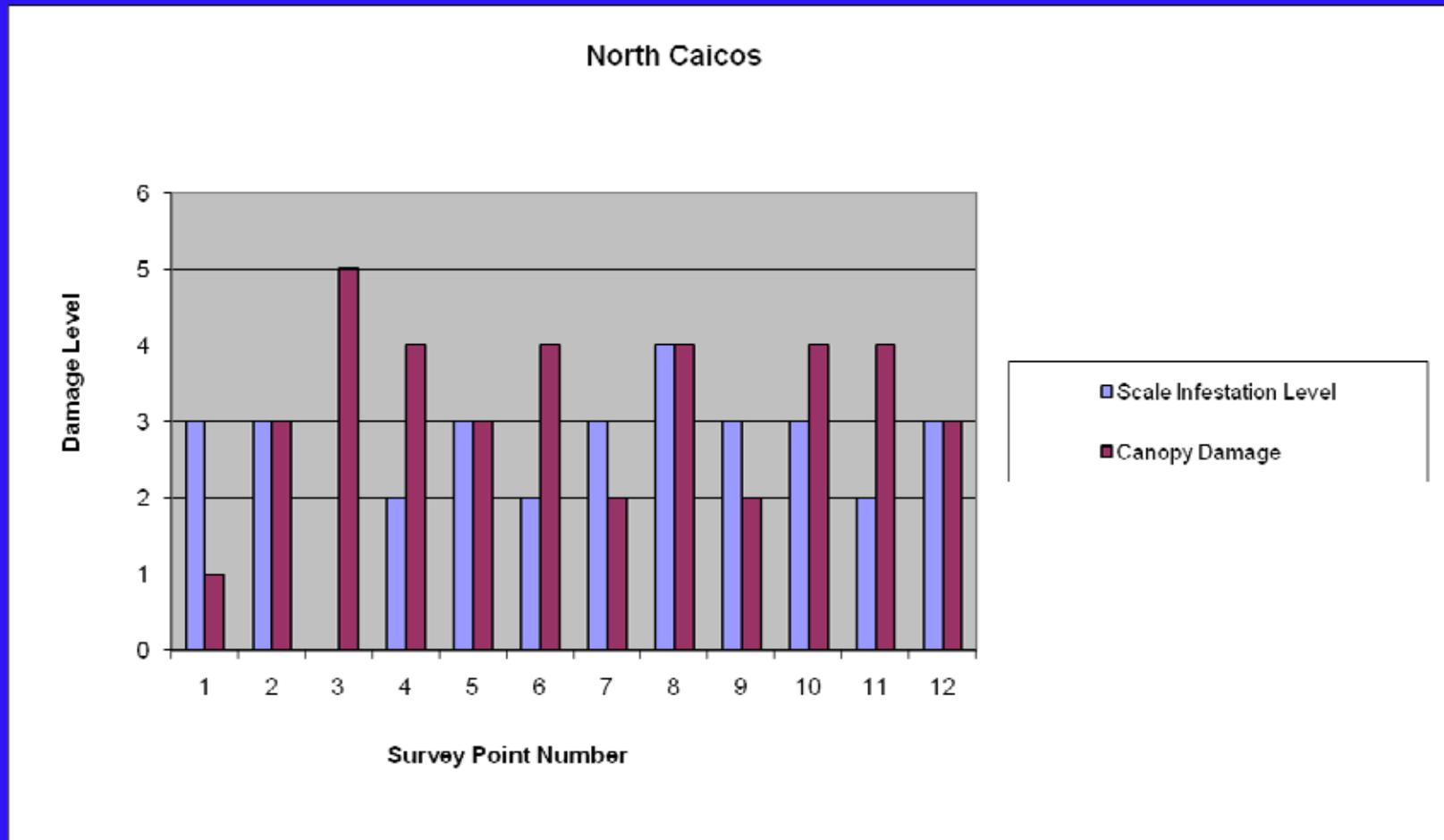
140 plots were recorded in 2006-2007

- All areas with live trees have scale insect
- Average scale infestation level of 3 (5 being completely infested)
- Average canopy decline level of 3-4 (5 being completely dead)

More findings

- Average of 4-6 % of the leaf area in the plots is covered with sooty mould
- Average 1-2 % of the plots have not produced cones in the last 3 years
- Average of 44-50% of the plots do not have seedlings present
- Average of 50% of the trees in the plots are dead

Infestation/Damage



Range of damage on Pine Cay



Infested/dying trees on North Caicos



Dead trees on Pine Cay



Infested seedling, Middle Caicos



“Healthy” trees on Pine Cay



Conclusions

- Fast and constant rate of pine forest decline
- Increased levels of infestation
- Damage to understory by sooty mould
- Reduced reproduction and recruitment
- Need for extended monitoring, rescuing of seedlings, DNA work

Future

Rescuing seedlings

DNA work

Fire Management

