Patterns of plant phenology from 10 years of monitoring on Praslin

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What is phenology?

- Integrative environmental science used in global-change research
- Study of seasonal life cycle events

Monitor, understand, predict

- Plant phenology- budding, flowering and fruiting events in relation to climate

Why study plant phenology?

- Provide habitat and food for all other life forms
- Better understanding of pollination and seed dispersal
- Impacts of short-term and long-term climate events
- Baseline data for plant ecology, ecosystem studies and species specific research

Importance of phenology at Vallée de Mai

- Last intact relic palm forest in Seychelles
- Has all 6 endemic palms
- Unique and important ecosystem
- Education and tourism

Research aims

Determine…

1. Seasonal and annual trends in fruiting and flowering
2. Relationship between plant phenology and rainfall
3. Links between phenology and black parrot breeding
4. Species in need of conservation action

History of monitoring

2008 - Phenology monitoring began
- 45 indigenous species monitored – most not studied before

2009 - Black parrot monitoring began
- Monitored plants dropped to 14 species eaten by black parrots
- Included introduced mango, guava, starfruit and papaya

2011 - Plant range broadened
- Including species not in black parrot diet

2016 - Accuracy and reliability of methods discussed
- Papaya and starfruit removed from monitoring

2018 - Current protocol produced
- Guava, mango and santol removed following their control in VdM

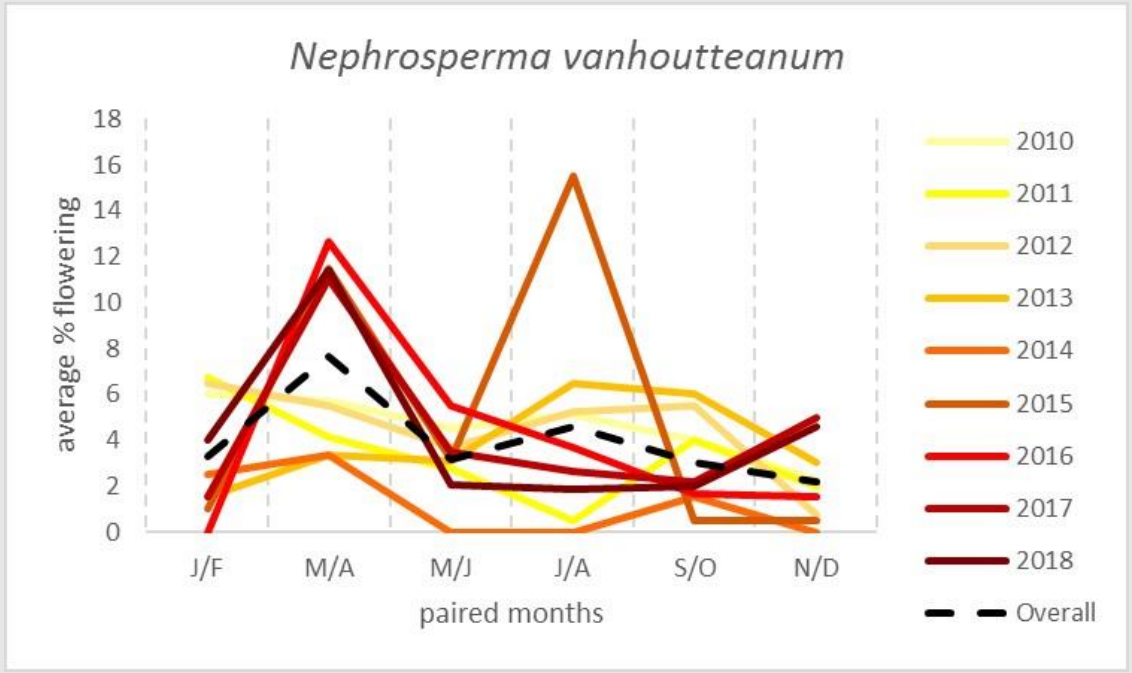
2019 - First review of the 10-year dataset!

Current methodology

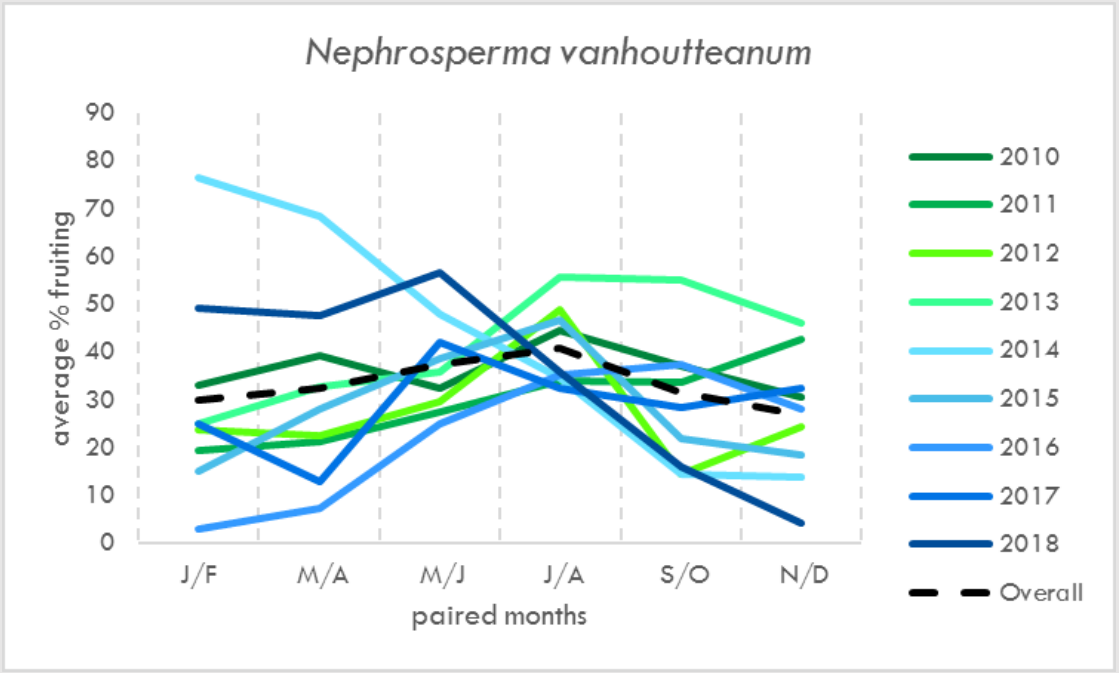
- 18 species – 12 endemic, 5 native and 1 introduced
- 5 individuals studied per species
- Estimate percentage of:
  - Buds, flowers and fruits
  - Ripe fruits

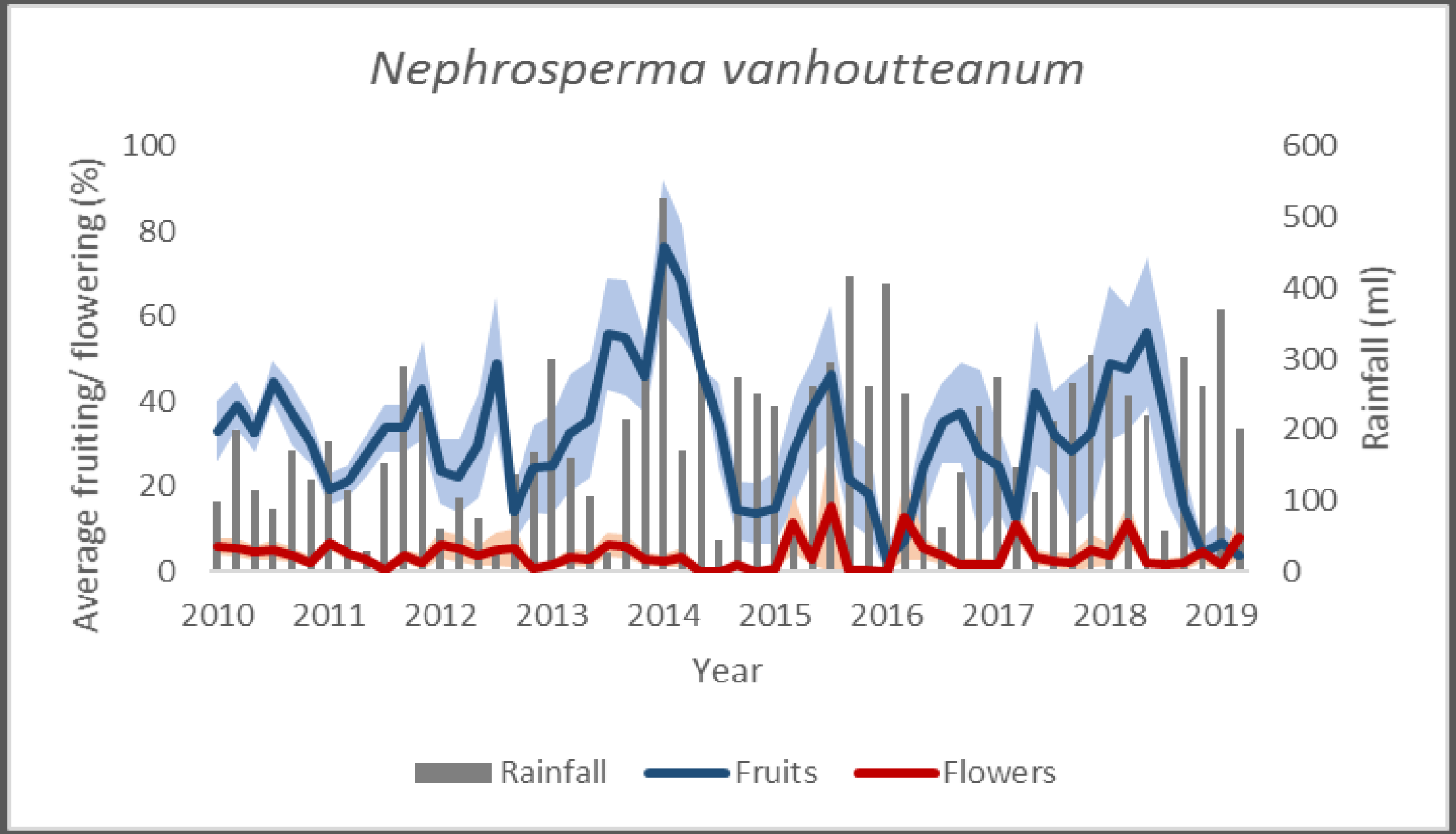
Results

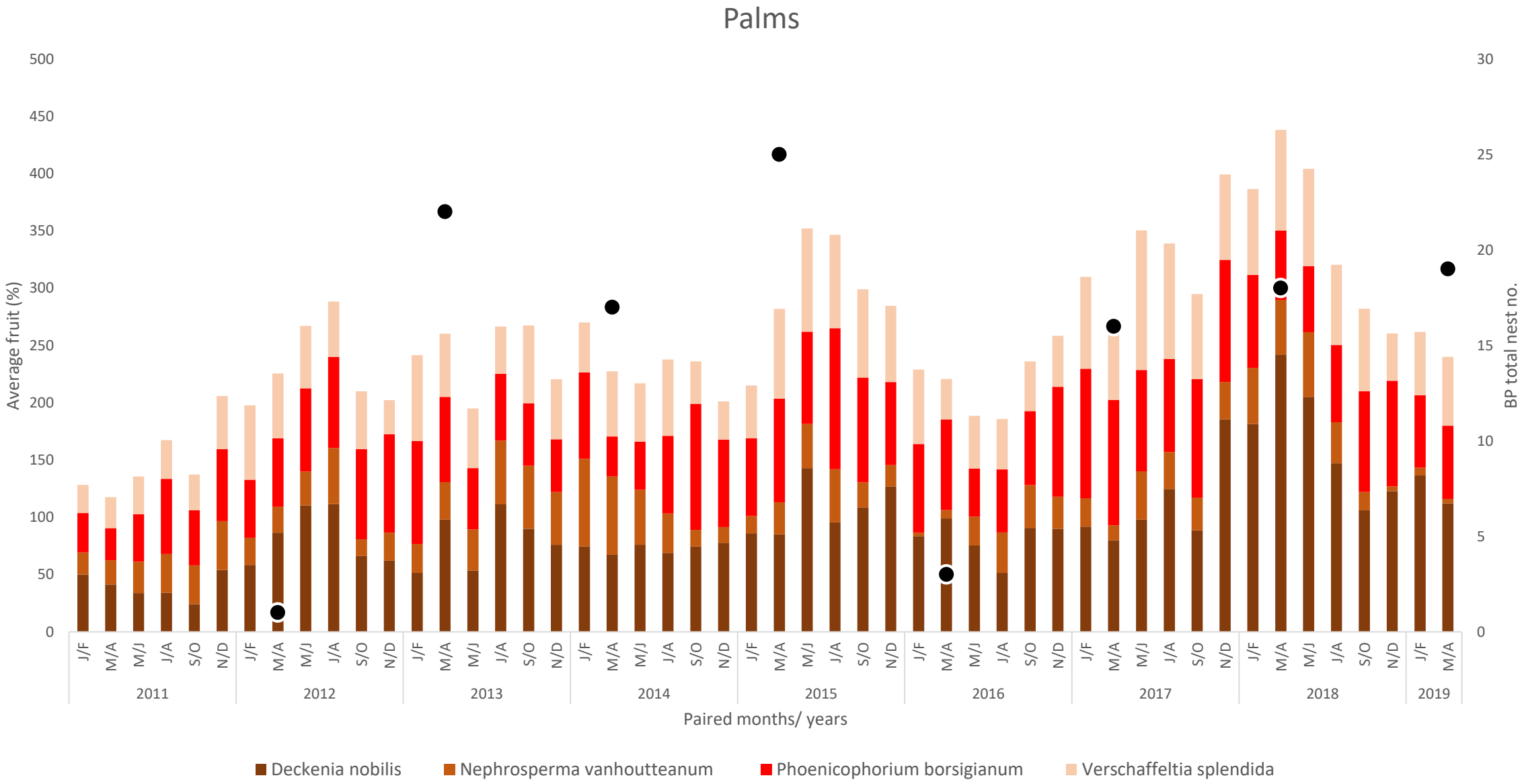
Flowering



Fruiting




Nephrosperma vanhoutteanum
Average fruiting/ flowering (%)
100
80
60
40
20
0
600
500
400
300
200
100
0
Rainfall (ml)
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
Year
Rainfall
Fruits
Flowers


Palms
Average fruit (%)
BP total nest no.
0
50
100
150
200
250
300
350
400
450
500
0
5
10
15
20
25
30
J/F
M/A
M/J
J/A
S/O
N/D
2011
2012
2013
2014
2015
2016
2017
2018
2019
Paired months/ years
Deckenia nobilis
Nephrosperma vanhoutteanum
Phoenicophorium borsigianum
Verschaffeltia splendida

Future plans

- Continue monitoring
- Produce the report
- Review methodology
- Highlight plant species that require conservation management
- Support and enhance other research in Vallée de Mai, Seychelles and external researchers/ organisations


Thank you