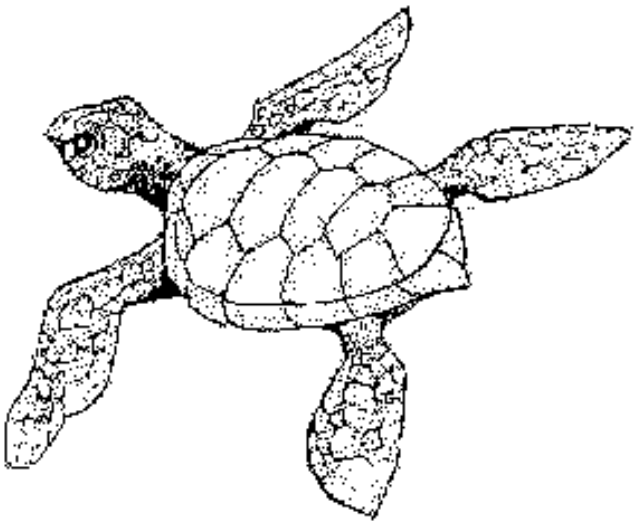
NATURE PROTECTION TRUST OF SEYCHELLES



RESEARCH AND MONITORING

ANNUAL REPORT

2009

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

NPTS is grateful for the support of IDC in support of the tortoise project, to Labriz in logistical support and assistance with forest restoration. We are also grateful to the Sussex University School of Geography for monitoring assistance.

A. ORGANISATION BACKGROUND AND CAPACITY

Nature Protection Trust of Seychelles was established in 1992 as a non-profit-making, non-governmental organisation dedicated to furthering the conservation of nature in the Seychelles islands, through informed scientific research to conserve species by conserving their habitats. Fulfilling its aim of promoting education, study and research in all fields of natural history the NPTS publishes two journals. The annual scientific journal, "*Phelsuma*" deals with all aspects of nature within the entire western Indian Ocean and includes reports on all NPTS projects. "Birdwatch" is a quarterly publication containing news and anecdotes concerning the natural history in the islands.

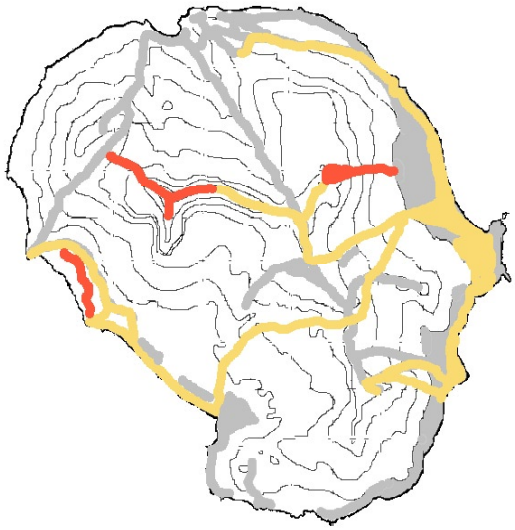
NPTS manages the Silhouette Conservation Project (ecosystem conservation and research) and the Seychelles Giant Tortoise and Seychelles Terrapin Conservation Projects (research, captive breeding and reintroduction). Within the Silhouette Conservation Project there are special research projects on Seychelles sheath-tailed bats, sooglossids frogs and climate change. In addition NPTS is investigating the conservation needs of the sheath-tailed bat on different islands in conjunction with the Ministry of Environment. In 2000-2005 NPTS managed the Indian Ocean Biodiversity Assessment researching species status and diversity on all of the Seychelles islands, results of this are being published as a series of taxonomic monographs. NPTS has capacity in taxonomy, ecological research and ecosystem conservation.

B. RESEARCH AND MONITORING

1. SUMMARY

In 2009 habitat monitoring was established using a system of permanent plots for vegetation, invertebrate, vertebrate and climate monitoring. Ongoing monitoring of reef-flat areas recorded continued deterioration of sea-grass and associated organisms. Seychelles sheath-tailed bat numbers increased to a new record level of 40 individuals. Field surveys were carried out in new areas of high forest.

Areas surveyed in 2009. Grey – visited before 2009, orange – visited in 2009, red – new areas visited in 2009



2. SPECIES

2.1. Birds

2.1.1. Landbirds

Landbirds recorded in point-counts at three sites in March 2009 (La Passe, Jardin Marron, Mon Plaisir):

	La Passe		Jardin Marron	Mon Plaisir
Habitat	lowland coconut habitat		mid-altitude forest	moss forest
Altitude	30m		390m	550m
Points	5	5	10	5
	un-managed	managed (10 yr)		
Seychelles bulbul	0	0	0.25±0.45 [1 heard]	1.00±0.89
Seychelles sunbird	[1 heard]	[1 heard]	0	0
Madagascar fody	0.17±0.41	0	0	0

2.1.2. Seabirds

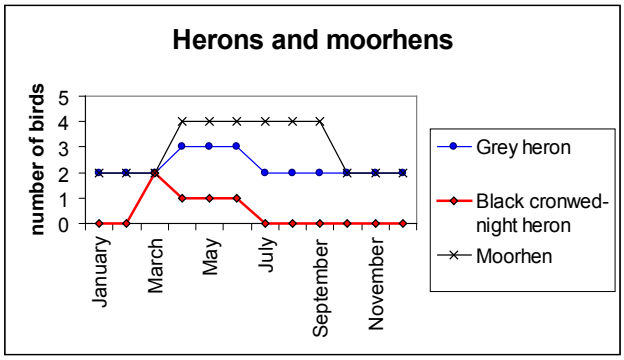
Records were kept of all seabirds on Silhouette, except for white-tailed tropic birds which are resident on the island.

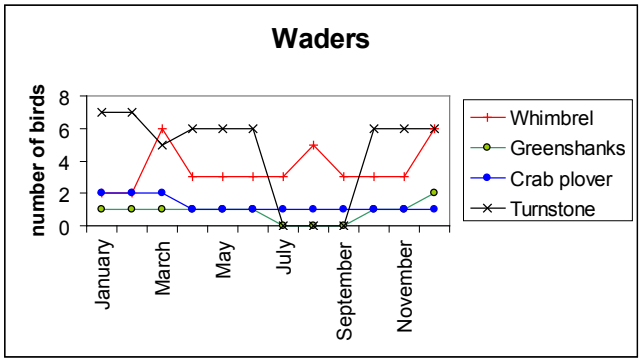
Common terns – 2 on 7-29th January, 6 on 8th February, 5 on 10th February, 2 on 1st March

Fairy terns - at hotel marsh on 12th June, flying around trees.

2.1.3. Herons, rails and shorebirds

All herons, rails and shorebirds recorded weekly, except for green-baked herons which are resident in all coastal areas. Moorhens are counted on the Dauban marsh only. Notable changes were the disappearance of black-crowned night-herons for much of the year.





2.1.4. Migrants

Blue-cheeked bee-eaters - recorded occasionally at start of year (6 present on 10th January, 3 on 23rd April). Reappearance in December but only two records: 1 heard at Jardin Marron 15th December, 1 seen at La Passe 16th December. This is almost one month later than last year's first records.

2.2. Reptiles

2.2.1. Giant tortoises

2.2.1.1. Captive population

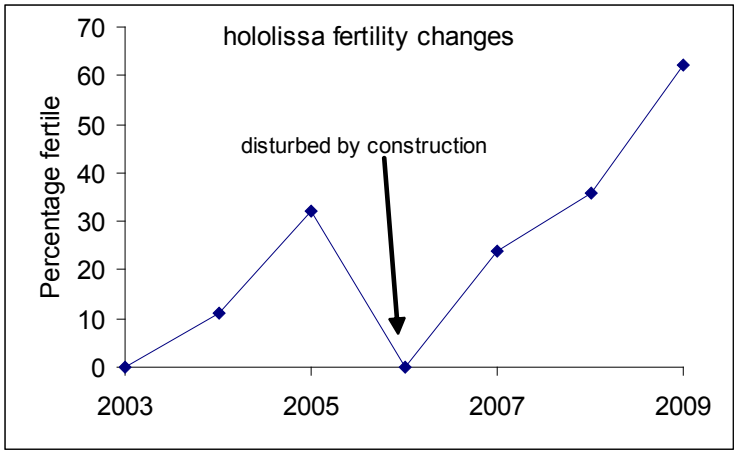
Captive tortoises maintained at La Passe are the subject of research on reproduction, growth and general ecology. Aldabra tortoises were removed to Desroches in December 2009.

Reproduction

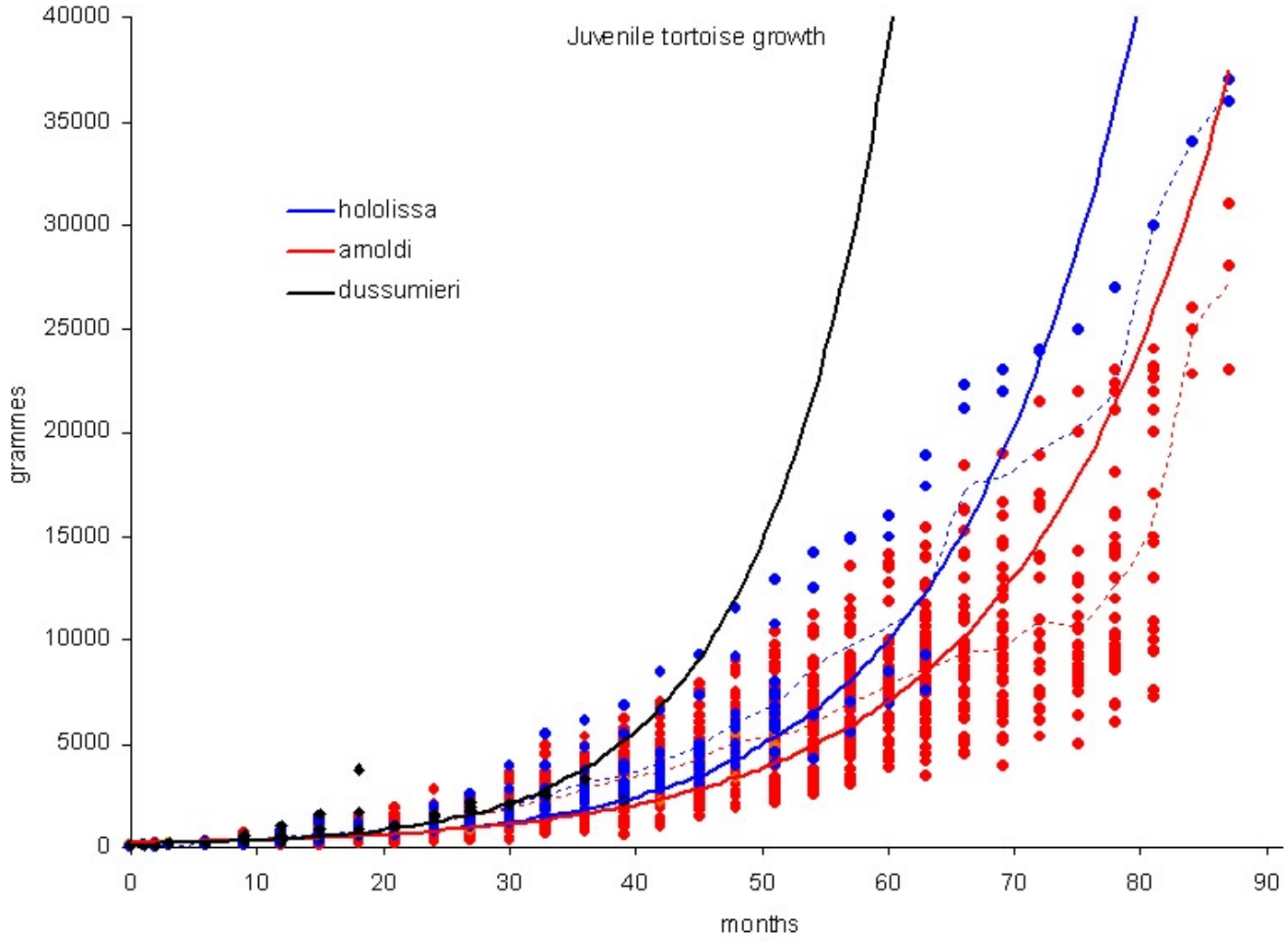
Species	Tortoise	Date	Clutch	Incubation (days)	Fertility	Hatching success	
						all eggs	fertile eggs
hololissa	Josephine	21st May	20	96-121		57.6%	
		26th June	21	105-115 male	81%	70%	69%
				112-113 female		20%	29%
		30 July	20	102-106 male	75%	40%	50%
				104 female		33%	50%
		25th September	16	-	25%	0%	0%
	Eve	20th May	0	-	-	-	-
dussumieri		?	16	?	?	?	?
		25th June	15	109-114 female	86%	67%	70%

Similar incubation dates in both male and female incubators indicate that incubation temperatures have not been set correctly; male incubator recorded 26.3-31.8C and female 25.7-32.9C.

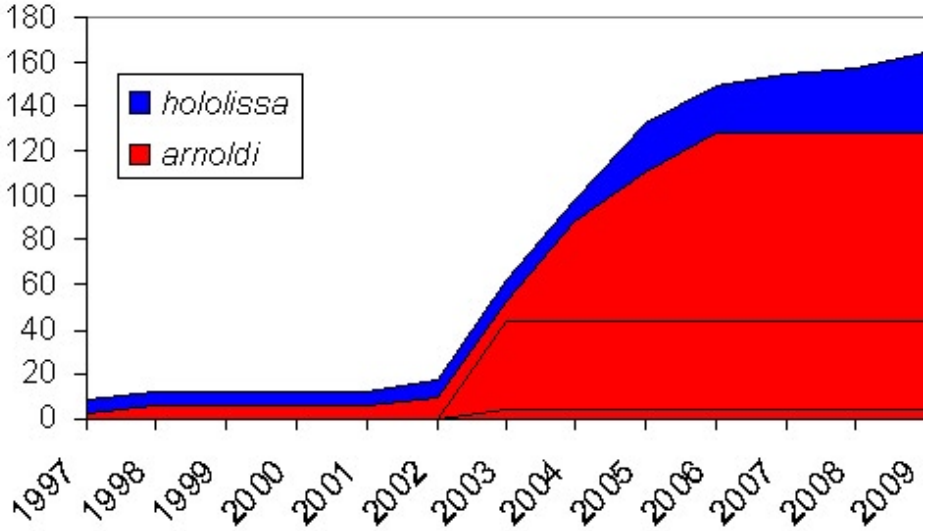
Changes in fertility of *hololissa* eggs:



Growth data on captive-bred juveniles

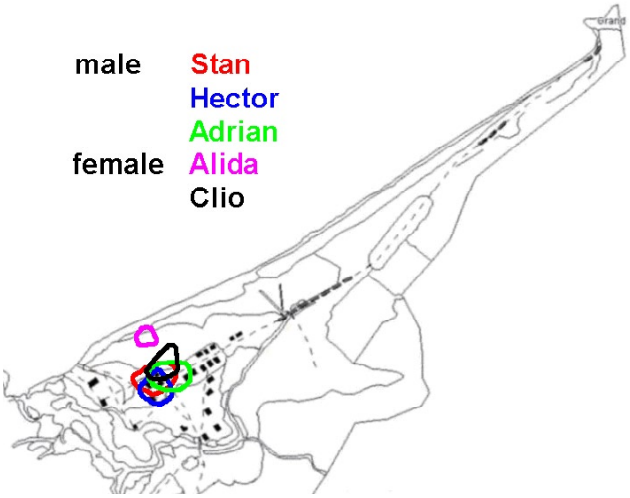


Captive tortosie populaiton growth



2.2.1.2. Released population

Adult *arnoldi* tortoises released at Grande Barbe in 2006 were monitored regularly. Distribution shown below.



2.2.2. Terrapins

2.2.2.1. Captive population

No breeding recorded in 2009.

2.2.2.2. Wild populations

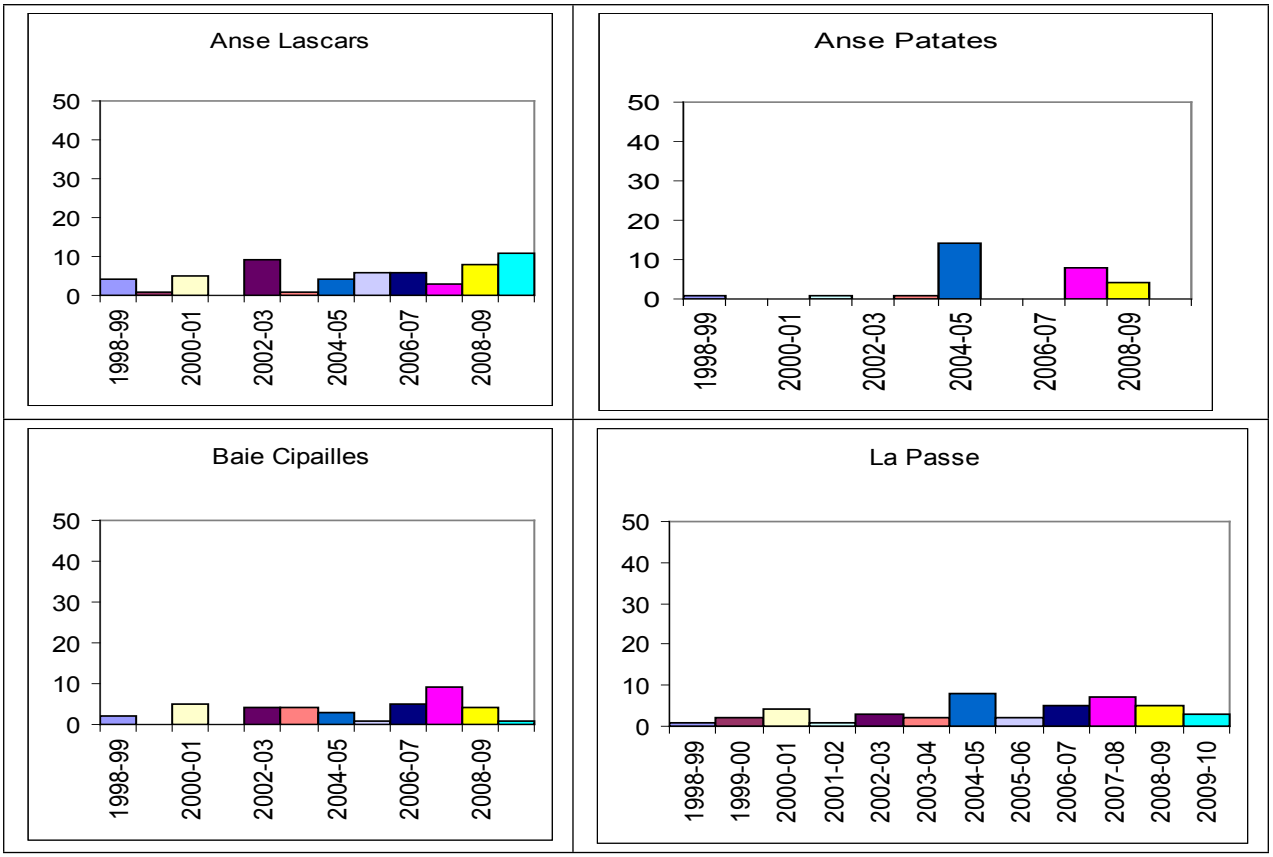
All observations recorded. One hatchling *Pelusios castanoides* was found dead on the road at Labriz on 7th December, having been run-over by a buggy.

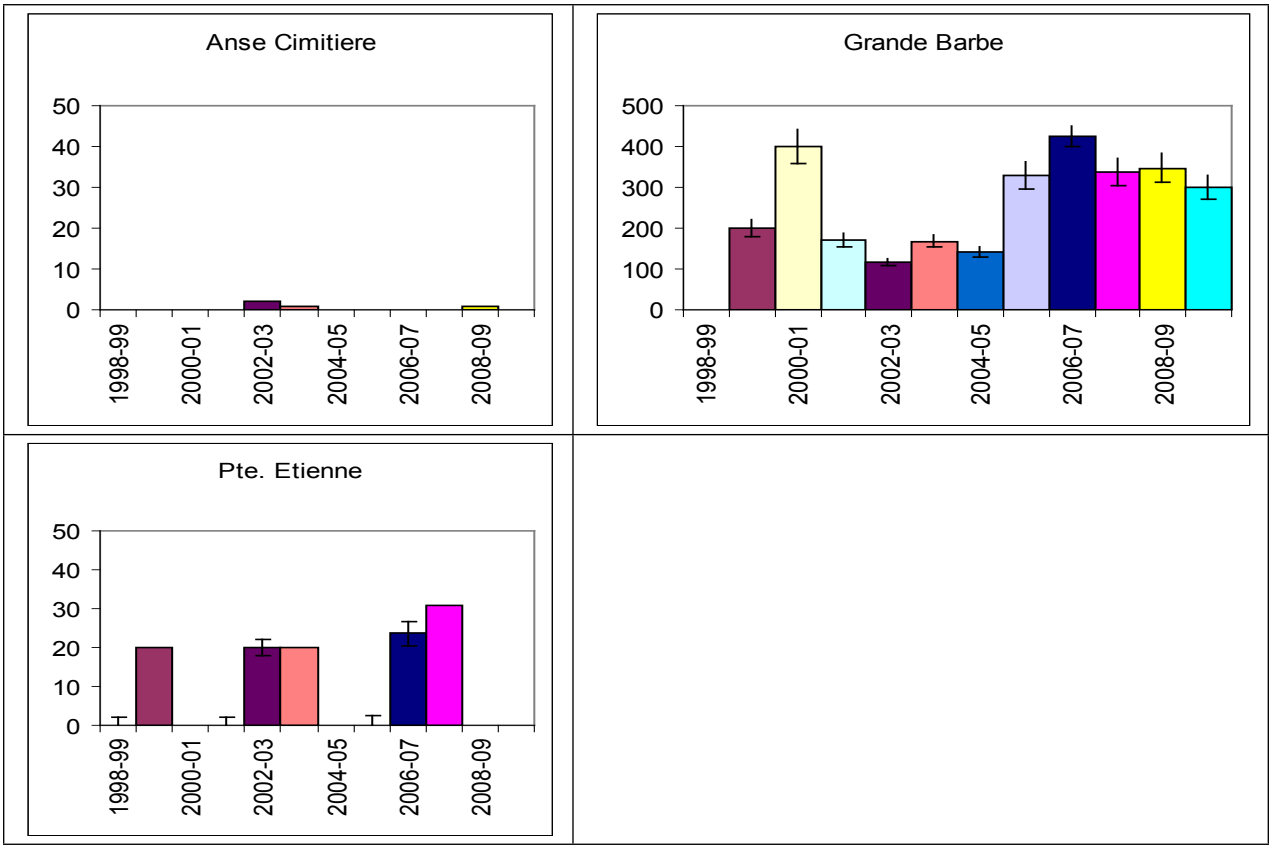
2.2.3. Turtles

Total nesting recorded for the 2009-2010 season shown in comparison with previous years.

2.2.3.1. Hawksbill turtles

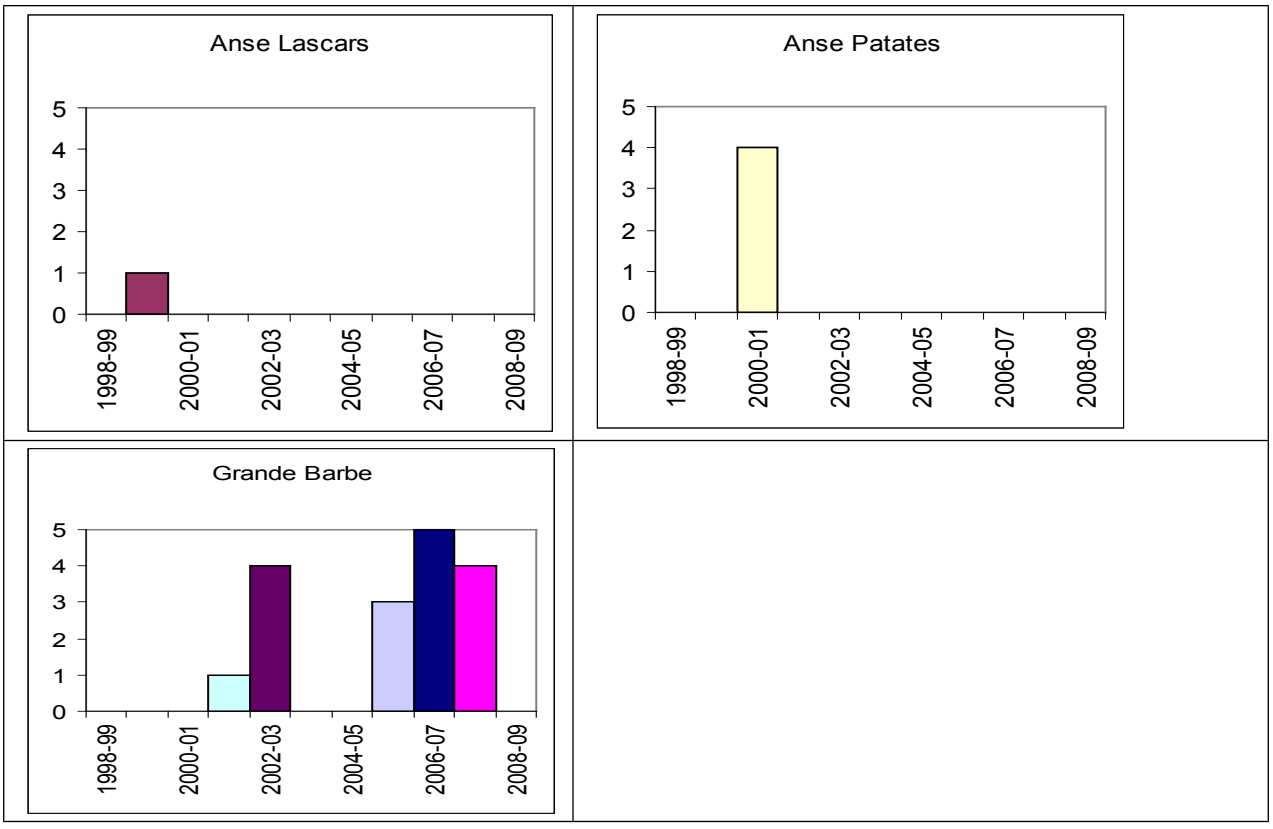
Slight decrease in nesting in 2009-10 at all beaches except Anse Lascars. No survey at Pointe Etienne.





2.2.3.2. Green turtles

No green turtle nests recorded in 2009-10.



2.2.3.3. Hatching success

A light excluding box was used over nests at La Passe in January, all hatching successfully except one nest at Spa washed away. Two hatchlings found in hotel lake on 26-27th February (nest not located), released into sea on 6th March. Hatchling on road near Spa 17th March. 3 rescued from collapsed nest at Anse Lascars, 2 dead in nest. Hatching recorded Anse Lascar 27th February

Comparison of hatching success over different years

	No light box	Light box	
	2006-7	2007-8	2008-9
Nests	6	5	5
Number of nests with disorientation	6	1	1
Disorientated hatchlings	>200	6	2

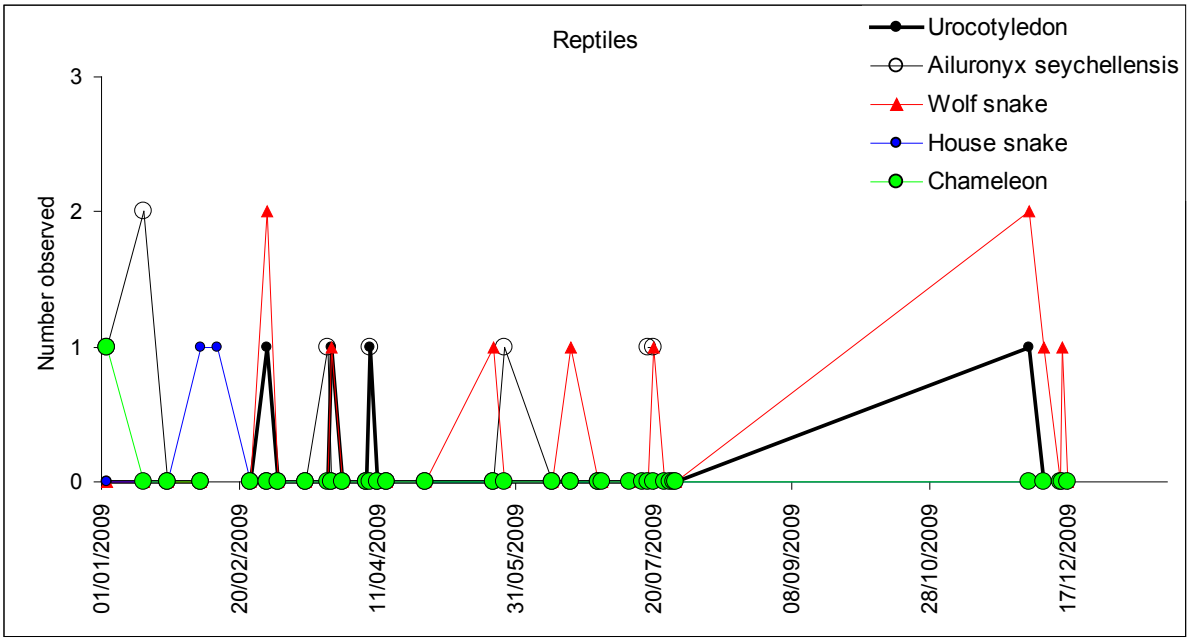
2.2.4. Reptile population monitoring

Reptile populations were monitored in two studies: point counts and transects.

Reptiles recorded in 5m radius point-counts (numbers per hectare – mean ± sd)

	La Passe		Jardin Marron	Mon Plaisir
Habitat	lowland coconut habitat		mid-altitude forest	moss forest
Altitude	30m		390m	550m
	un-managed	managed (10 yr)	un-managed	un-managed
points	5	5	10	5
Seychelles skink	203.7±113.31	25.5±57.29	25.5±33.10	0
Gardiner's skink	0	0	63.66±70.03	0
Phelsuma sp.	0	25.5±57.29	0	0

Reptile transects: all reptiles observed along the Jardin Marron path were recorded.



2.2.5. Reptile observations

Skinks - Two clutches of two2 soft-shelled eggs found at Gratte Fesse on 7th April, both laid in leaf litter, one clutch of eggs larger than the other. Neither clutch hatched, one of the larger eggs contained a fully developed embryo of *Pamelaescincus*.

Geckos - The invasive gecko *Hemidactylus frenatus* was first recorded on Silhouette in late 2008. It was heard at the Grande Case on 25th April and was common at La Passe by 1st December, population densities were very high as indicated by calls and the species is now well established throughout La Passe. *Gehyra mutilata* remains the conspicuous night gecko.

Chameleons – One gravid female on 3rd January at Jardin Marron.

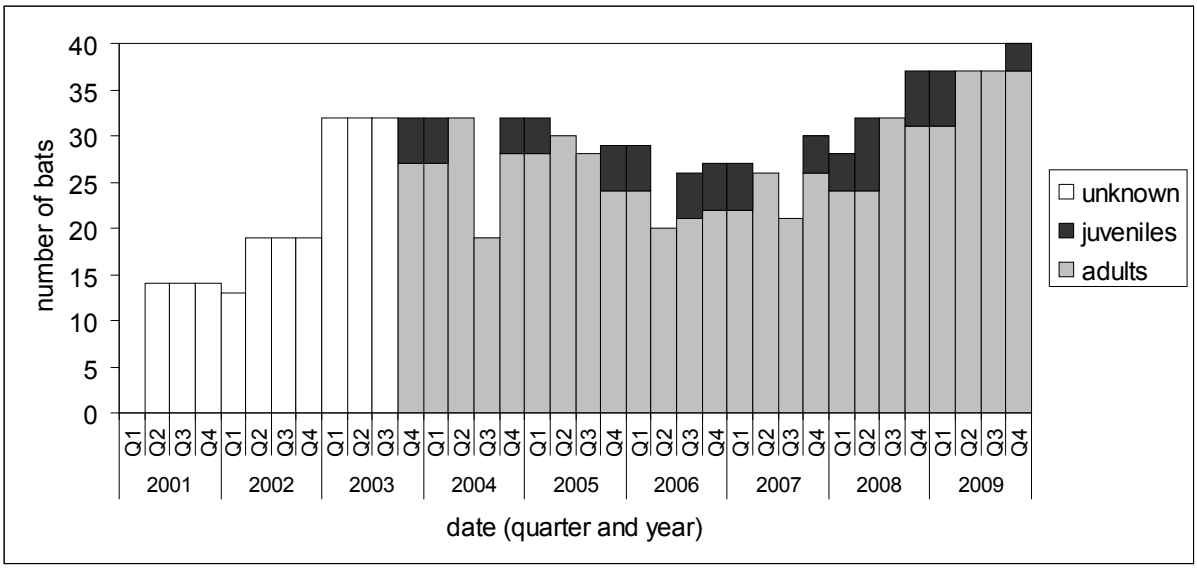
2.3. Land and Marine Mammals

2.3.1. Sheath-Tailed Bats

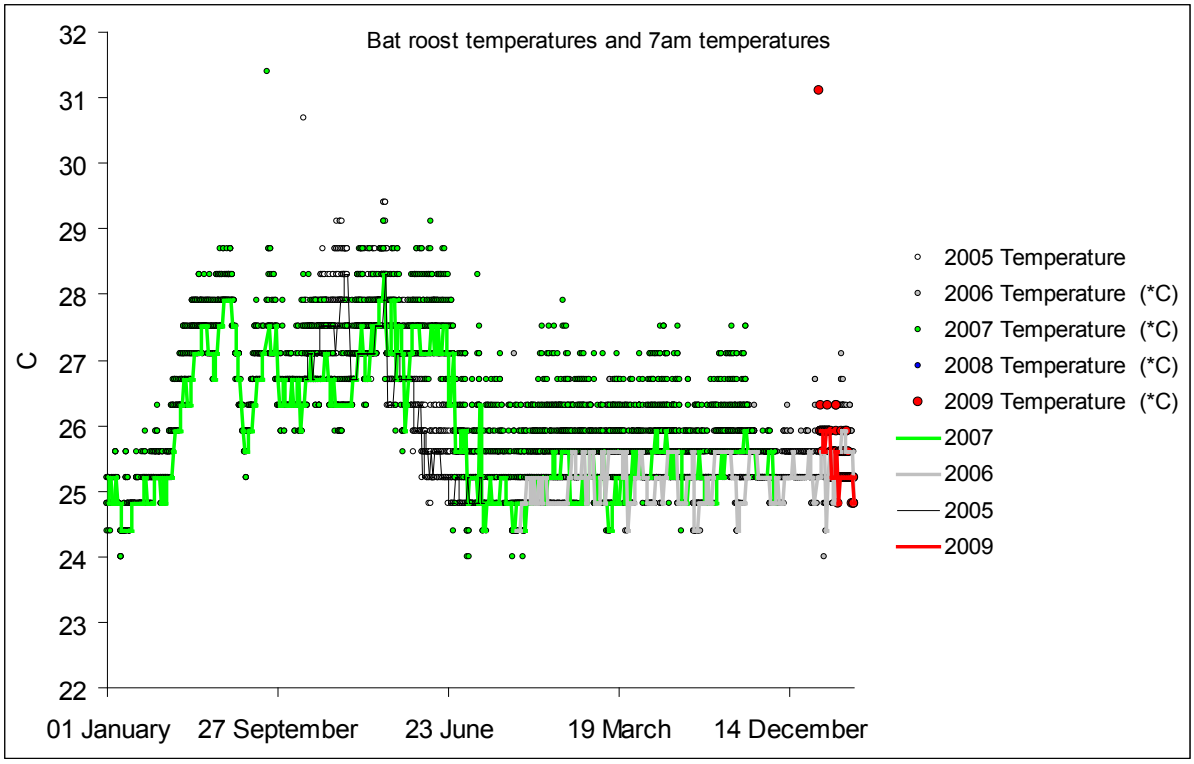
The La Passe roost was monitored constantly using a CCTV camera. Accurate counts were made quarterly and the distribution of foraging activity recorded. In addition observations were made of disturbance factors. Surveys for bats were made near known abandoned roosts at La Passe and Grande Barbe.

Population

A new record high population was recorded on 14th December (38 adults, 2 juveniles).



Temperatures in the active La Passe roost have been monitored since 2005



Disturbance factors

Continual presence of minimum 2 feral cats in area of bat roost. Very dense smoke from Indian construction workers cooking fire on 11th January, 3rd and 7th February carried into bat roost.

Other roosts

No evidence of any recent bat activity at Grande Barbe.

2.3.2. Fruit bats

No monitoring carried out

2.3.3. Introduced mammals

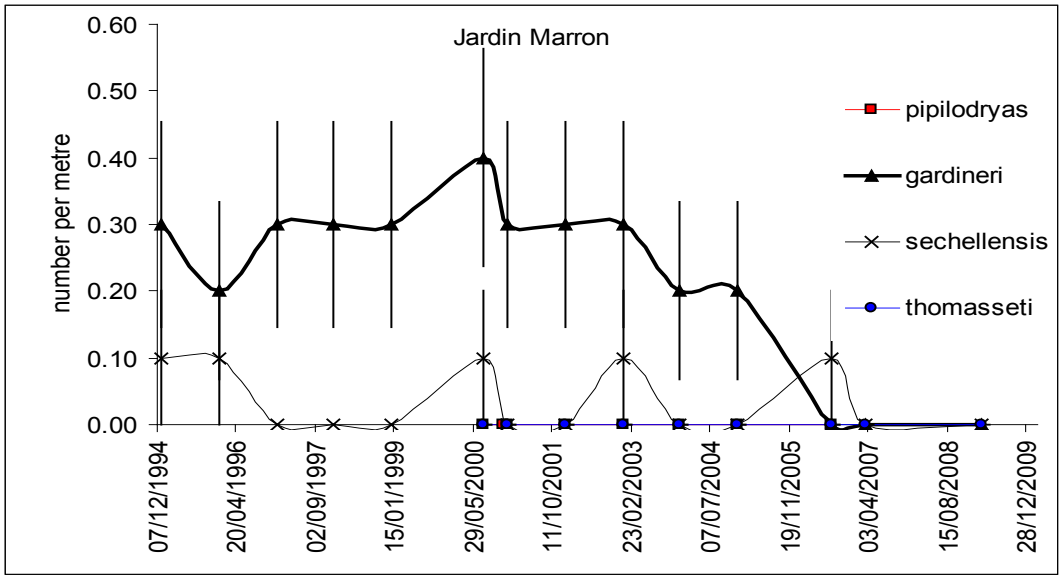
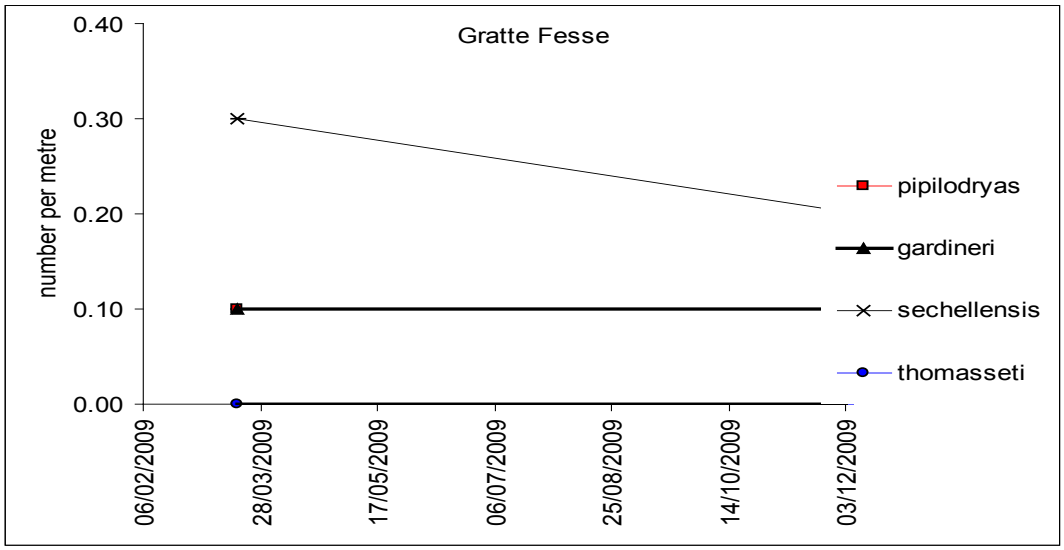
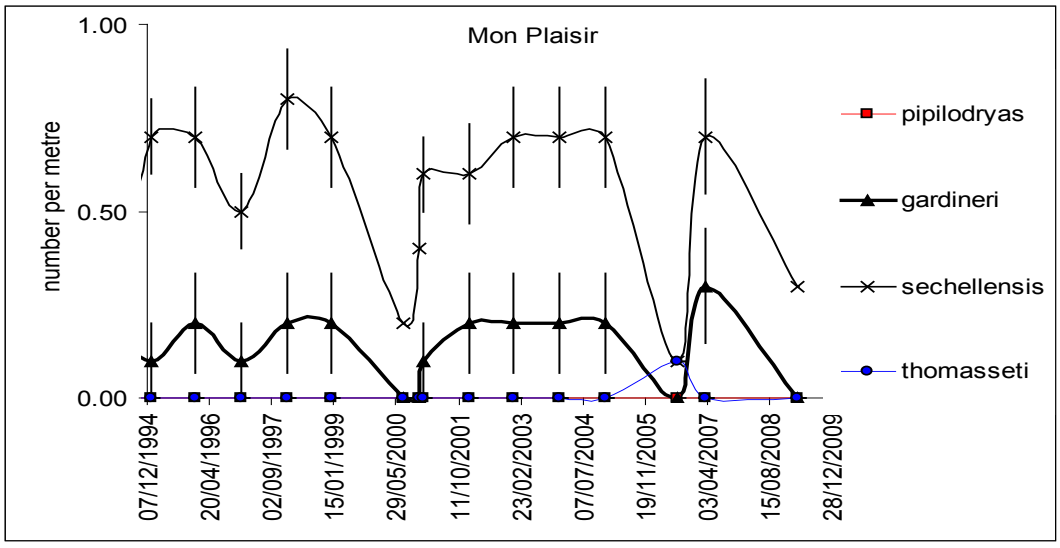
Only casual observations made - continual presence of minimum 2 feral cats in area of bat roost.

2.4. Amphibians

2.4.1. Sooglossidae

Monitored at three field sites in March (Jardin Marron, Mon Plaisir, Gratte Fesse). Recent metamorphs recorded on 29th–31st March (*Sooglossus sechellensis*) and a half-grown juveniles on 31st March (*S. sechellensis*) and 17th December (*S. pipilodryas*). An increase

in frog activity at Jardin Marron by December was noted.

Altitude	Monitoring results
390m	
400m	
550m	

2.4.2. Tree frog

Records kept of wild tree frogs and observations made on captive breeding.

2.4.2.1. Wild population

One reported from hotel 15th August

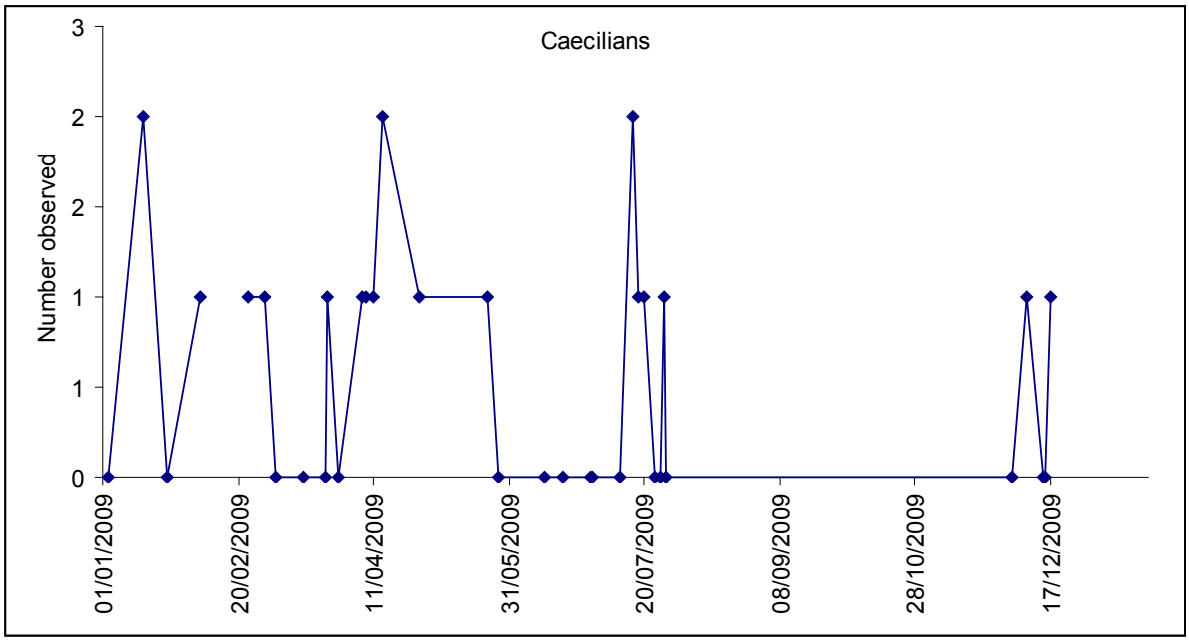
2.4.2.2. Captive tree-frogs

Bred in July (hatched 9th August) and October, with at least 150 eggs laid above the water (after 3 weeks this clutch comprised: 4-7mm – 5; 7-10mm – 95; 10-14mm – 46; 14.7 mm with 2 legs – 2). By December the July reproduction had resulted in 4 froglets, 5 new metamorphs in December.

Frogs reared from July 2008 measured 44mm by the middle of the year, one (male) recorded calling on 9th December (450 days after metamorphosis). Both were released in the seasonal channel behind the hotel on 19th December.

2.4.3. Caecilians

All caecilians were recorded.



2.5. Invertebrates

2.5.1. Lepidoptera

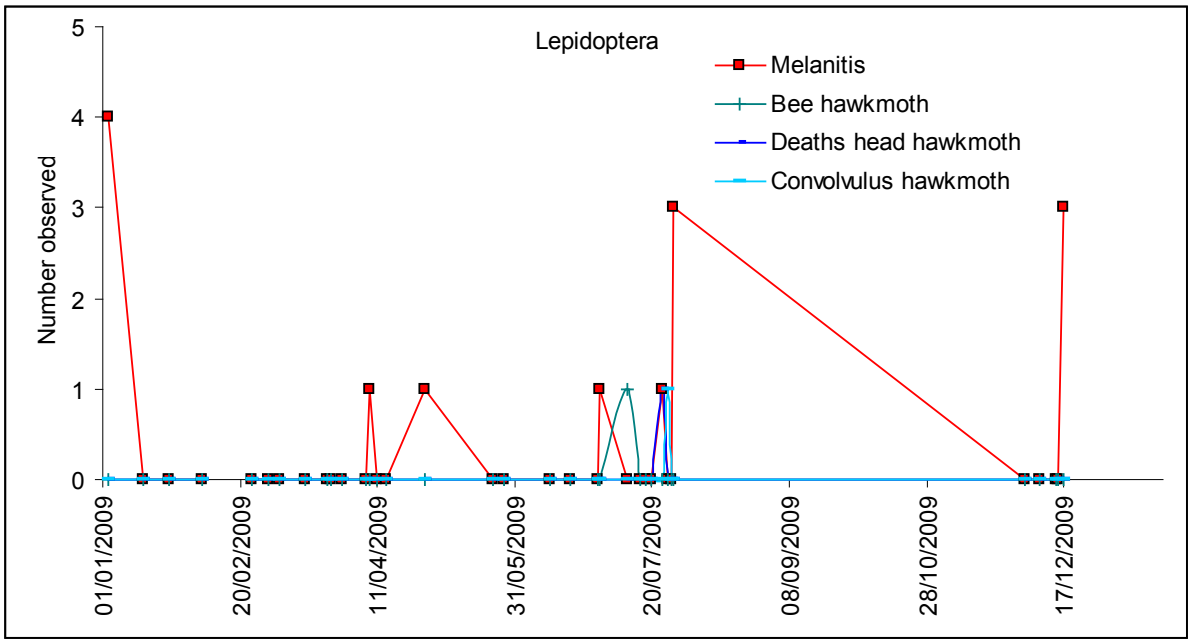
Unusual records:

Eilema contorta on Mont Dauban 8th December.

Euproctis pectinata at hotel bridge lights 10th December.

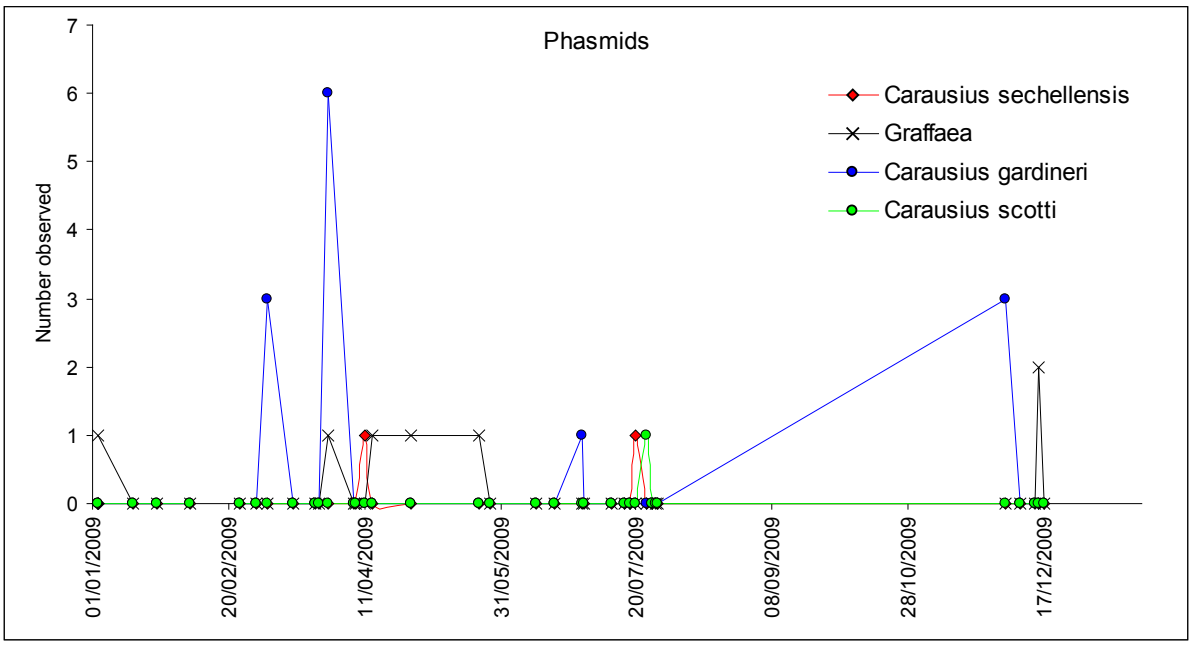
Nyctemera seychellensis adults and caterpillars on *Gynura* at La Passe March-April.

Monitoring of *Melanitis leda* on Jardin Marron path and Sphingidae in all areas



2.5.2. Phasmida

Monitoring on Jardin Marron path



2.5.3. Odonata

Dragonflies and damselflies species recorded occasionally.

Jardin Marron - *Allolestes maclachlanii* and *Leptocnemis cyanops* abundant in forest,

Grande Barbe - *Ceriagrion glabrum* observed 31st March, *Tramea limbata* at coast, *Tenibasis alluaudi* at south end of Grande Barbe in December. This species has now been found in all the wooded parts of Grande Barbe.

Mon Plaisir - two *Zygonyx luctifera* observed patrolling small canopy gaps on 29th March.

La Passe - *Tramea limbata* present all year but uncommon until December.

Anse Patates - one pair of *Orthetrum stemmale* in December.

2.5.4. Scorpiones

All observations recorded.

Isometrus maculatus on veranda at La Passe 22nd February

Lychas braueri female with 7 babies found at Mon Plaisir 30th June

2.5.5. Spiders

Observations of rare species recorded.

Conothele truncicola on *Artocarpus heterophyllus* tree at Mon Plaisir 30th June 2009

2.5.6. Hemiptera

2.5.6.1 Cicadas

Yangia seychellensis recorded whenever observed: nymphal skins above Anse Patates 27th March and on Mon Plaisir 29th March and 30th June (2).

2.5.6.2 Whitefly

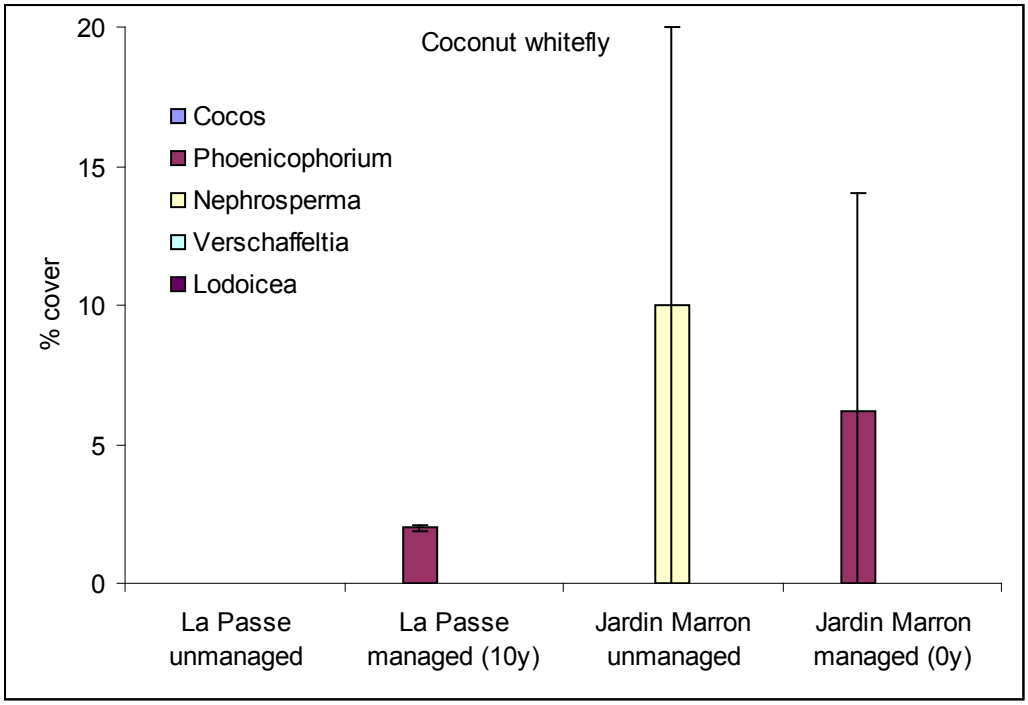
Whitefly were recorded in all areas when observed. Monitoring comprised recording the presence of whitefly on common plants for spiral whitefly and estimating the percentage of leaf area affected by coconut whitefly on 10 leaves of the main forest plants.

Spiral whitefly

Levels of infestation in 2009 were lower than in 2008 and by the end of 2009 whitefly infestations at La Passe had reduced significantly.

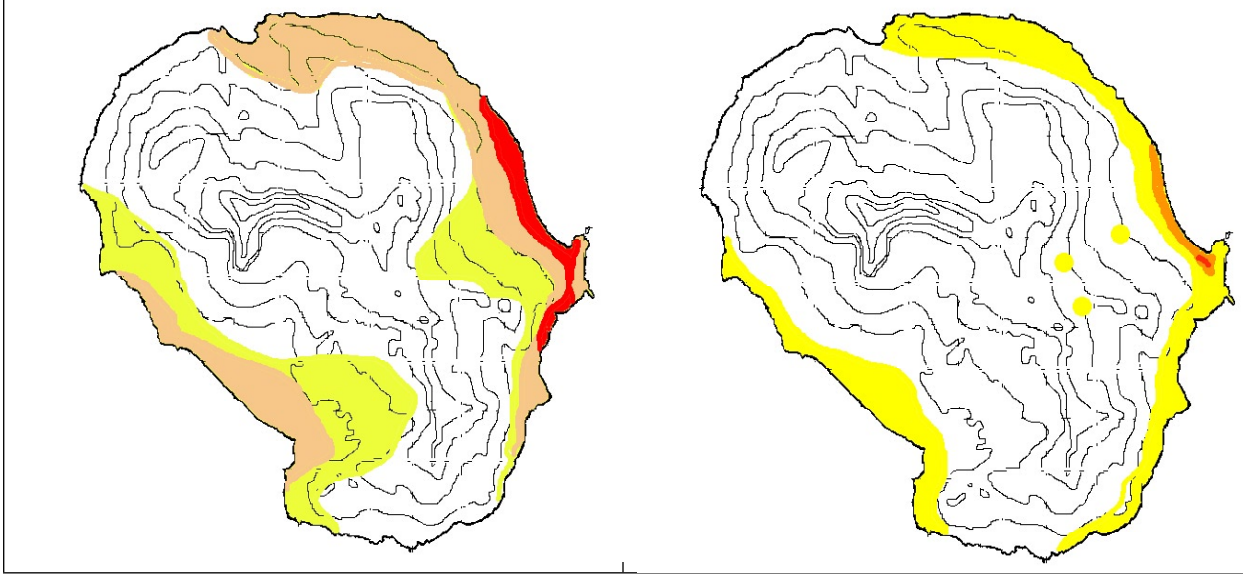
Coconut whitefly

Recorded infesting *Cocos nucifera* around the coast and endmic palms at La Passe forest restoration area (*Phoenicophorium borsigianum* and one *Nephrosperma vanhouetteana*), Jardin Marron (*Nephrosperma vanhouetteana*) and on the Grande Barbe path (very low infestation on one *Roscheria melanochaetes*). Present on *Curculigo seychellensis* on the summit of Mt. Dauban, No harmful effects observed and not present on palms. By the end of 2009 whitefly infestations on *Phoenicophorium borsigianum* in forest restoration area had reduced.



Whitefly distribution in 2009

Spiral whitefly	Coconut whitefly
Yellow – present; orange – moderate infestation (>25% cover on >5% of susceptible plants); red – high (>25% cover on >50% of susceptible plants).	Yellow – present; orange – moderate infestation (present on >10% of susceptible plants); red – high (present on >50% of susceptible plants).



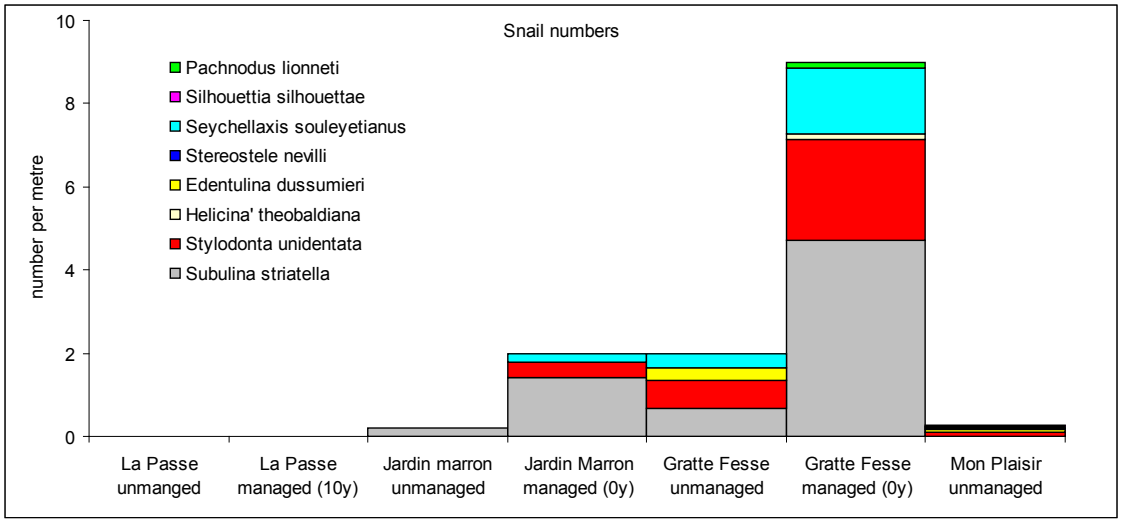
2.5.7. Coleoptera

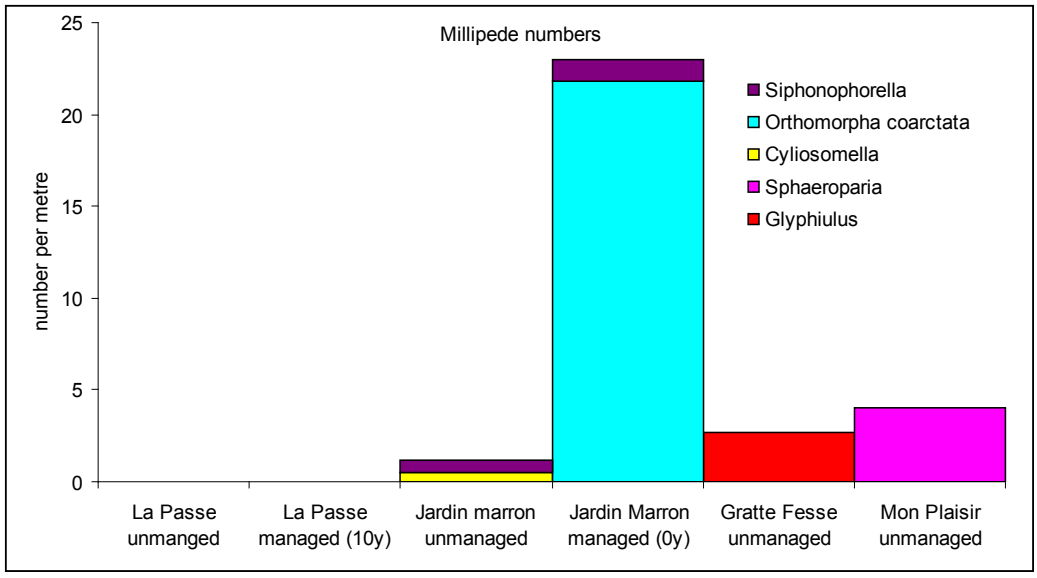
Unusual records noted.

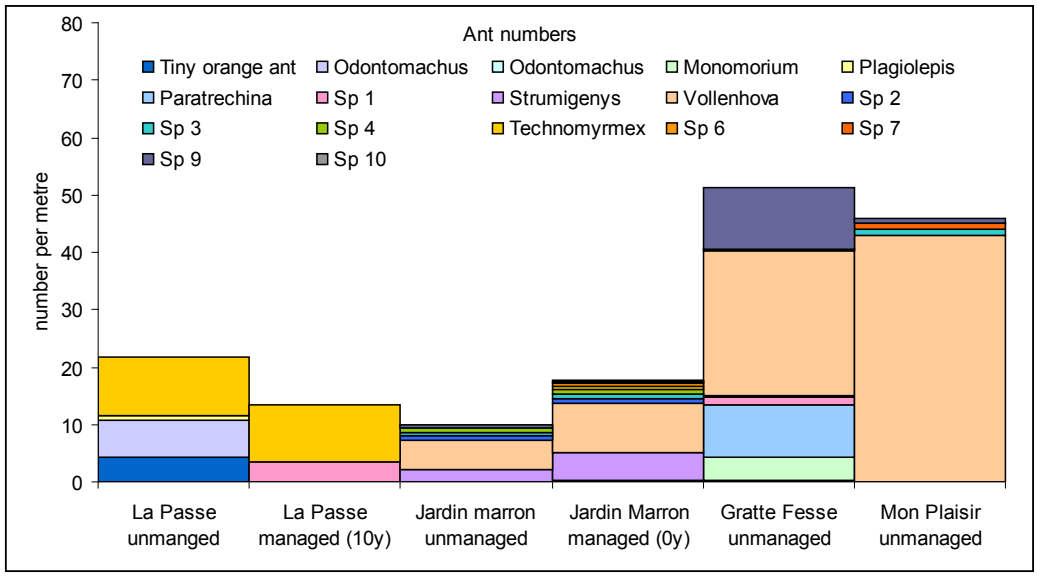
Coptops humerosa attracted to lights at La Passe 18th December.

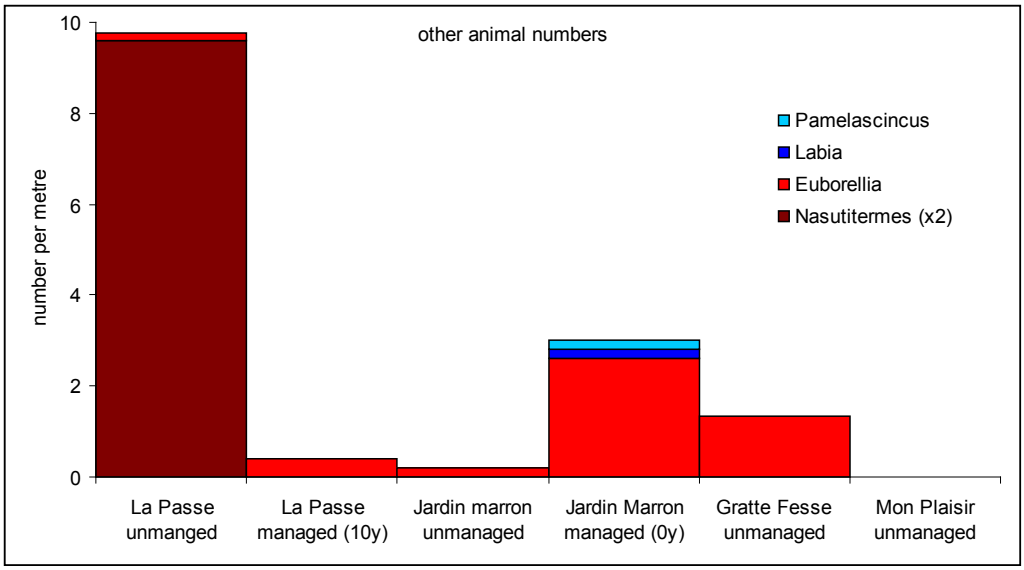
2.5.8. Monitoring

Selected invertebrate groups are monitored in permanent plots: snails, millipedes, ants, termites and earwigs. These have been selected as easily identified taxa containing endemic, indigenous and invasive species. The ants are not fully identified at present, the taxonomy is expected to be completely revised during 2010.


Snail numbers
number per metre
10
8
6
4
2
0
Pachnodus lionneti
Silhouettia silhouettae
Seychellaxis souleyetianus
Stereostele nevilli
Edentulina dussumieri
Helicina' theobaldiana
Stylodonta unidentata
Subulina striatella
La Passe unmanged
La Passe managed (10y)
Jardin marron unmanaged
Jardin Marron managed (0y)
Gratte Fesse unmanaged
Gratte Fesse managed (0y)
Mon Plaisir unmanaged


Millipede numbers
number per metre
25
20
15
10
5
0
Siphonophorella
Orthomorpha coarctata
Cyliosomella
Sphaeroparia
Glyphiulus
La Passe unmanged
La Passe managed (10y)
Jardin marron unmanaged
Jardin Marron managed (0y)
Gratte Fesse unmanaged
Mon Plaisir unmanaged

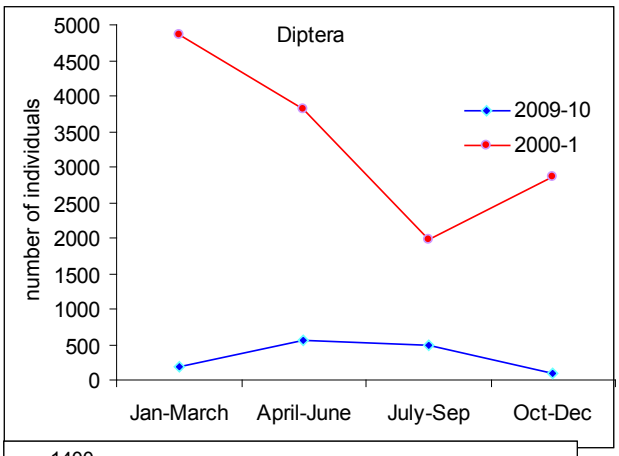

Ant numbers
number per metre
80
70
60
50
40
30
20
10
0
Tiny orange ant
Odontomachus
Odontomachus
Monomorium
Plagiolepis
Paratrechina
Sp 1
Strumigenys
Vollenhova
Sp 2
Sp 3
Sp 4
Technomyrmex
Sp 6
Sp 7
Sp 9
Sp 10
La Passe unmanged
La Passe managed (10y)
Jardin marron unmanaged
Jardin Marron managed (0y)
Gratte Fesse unmanaged
Mon Plaisir unmanaged

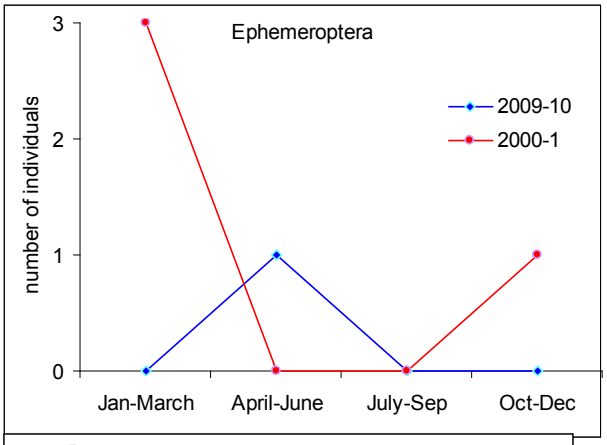


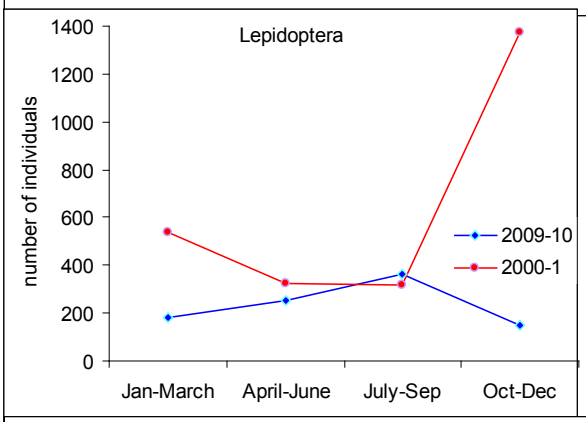
Malaise traps

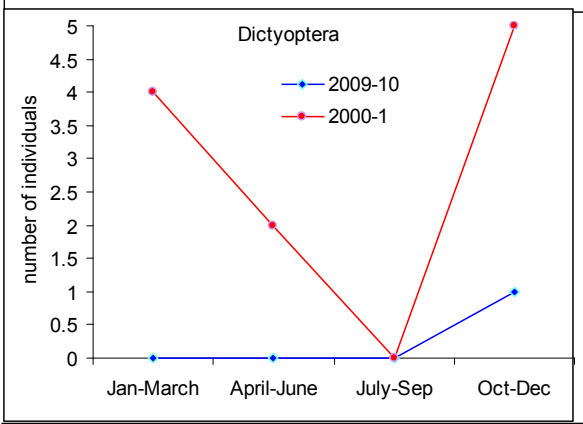
Malais traps were maintained at two sites (Jardin Marron and Mon Plaisir) for 12 months over 2009-10, these are compared to data from 2000.

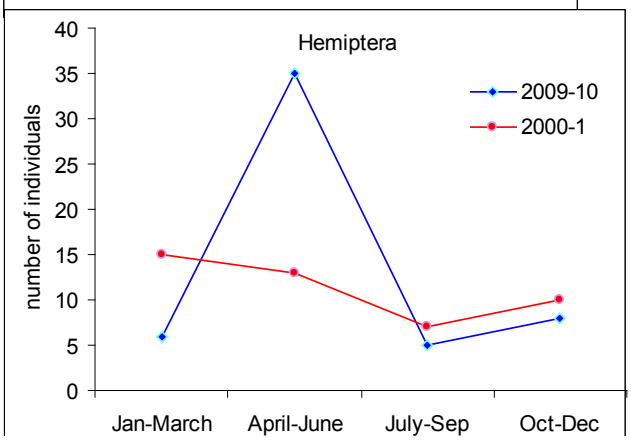
Jardin Marron:

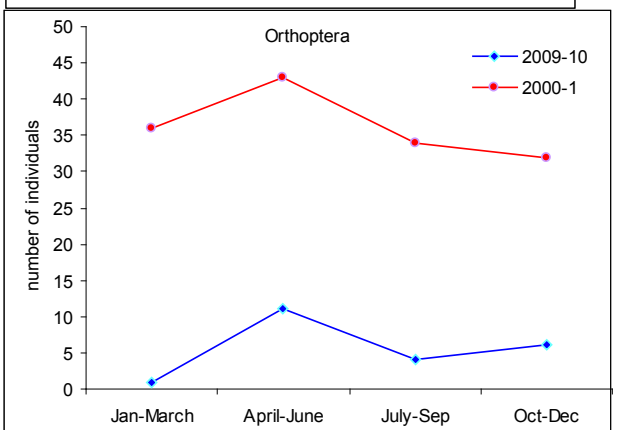


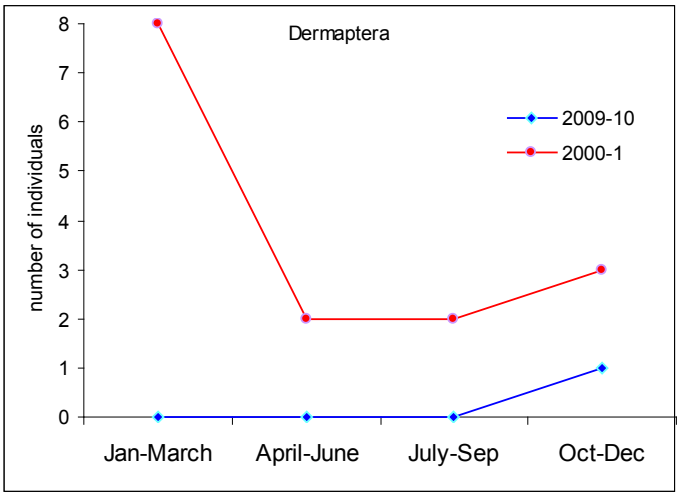


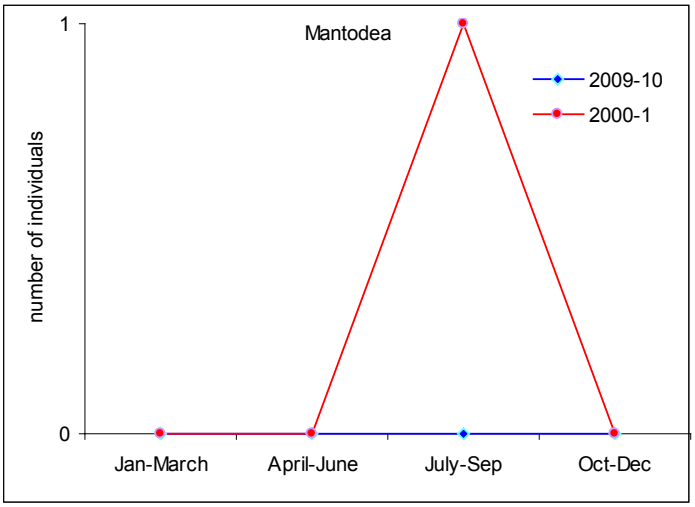


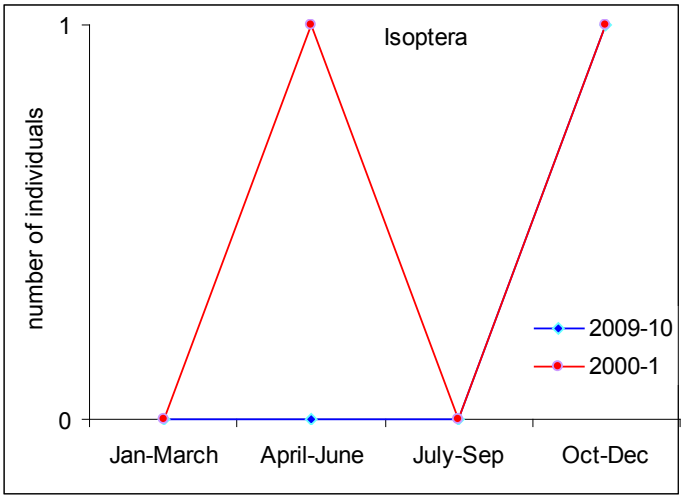


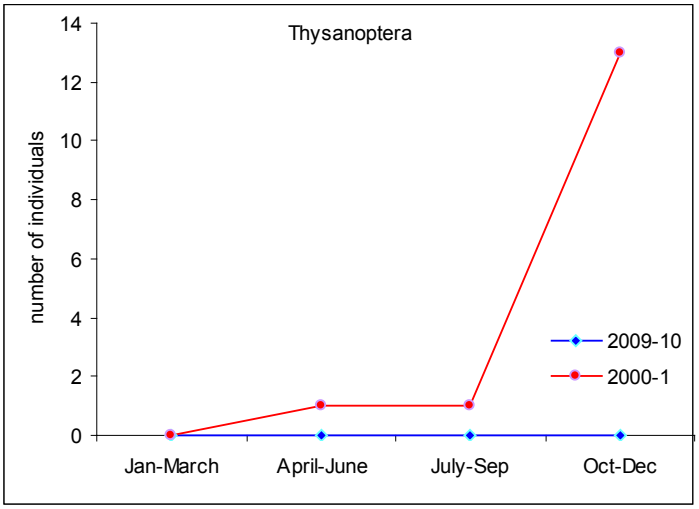


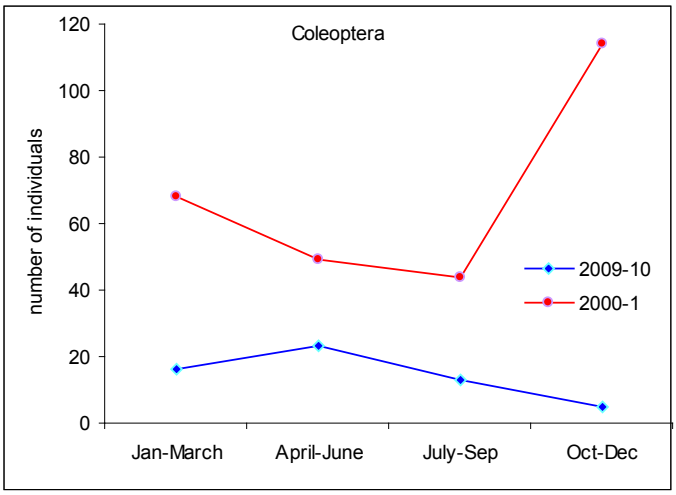


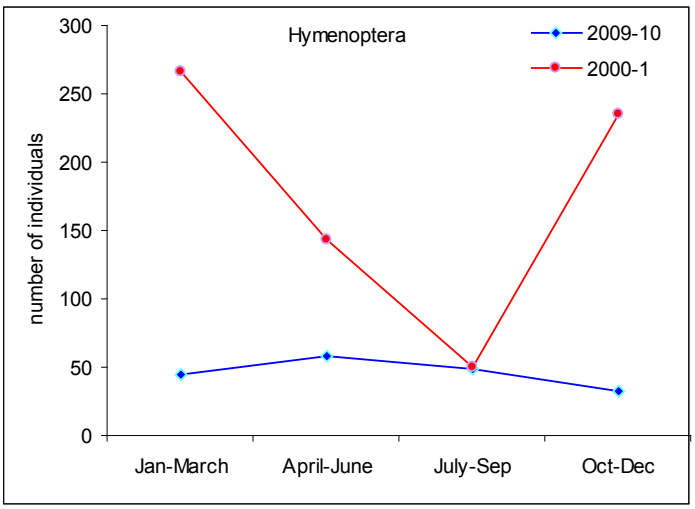

Dermaptera
number of individuals
8
7
6
5
4
3
2
1
0
2009-10
2000-1
Jan-March
April-June
July-Sep
Oct-Dec

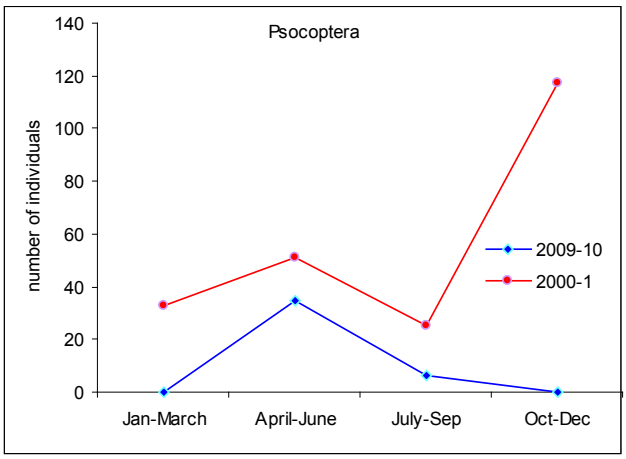

Mantodea
number of individuals
1
0
2009-10
2000-1
Jan-March
April-June
July-Sep
Oct-Dec

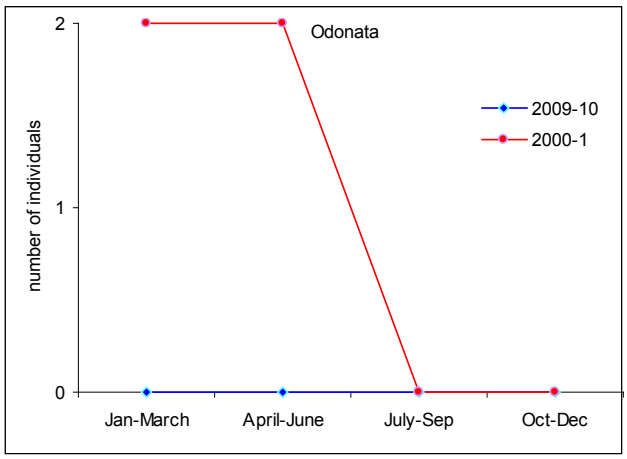

Isoptera
number of individuals
1
0
2009-10
2000-1
Jan-March
April-June
July-Sep
Oct-Dec

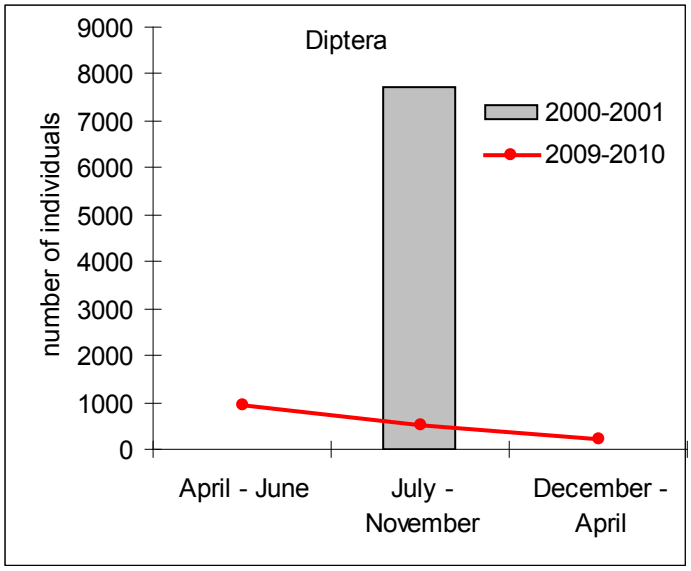

Thysanoptera
number of individuals
14
12
10
8
6
4
2
0
2009-10
2000-1
Jan-March
April-June
July-Sep
Oct-Dec

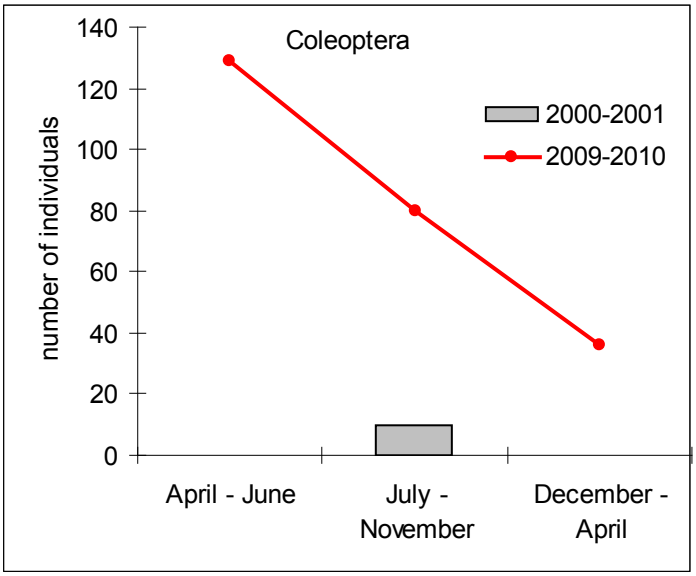

Coleoptera
number of individuals
120
100
80
60
40
20
0
2009-10
2000-1
Jan-March
April-June
July-Sep
Oct-Dec

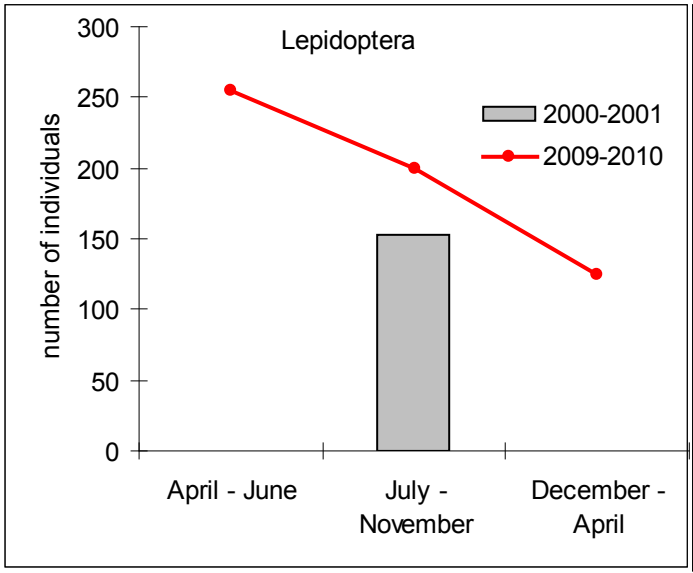

Hymenoptera
number of individuals
300
250
200
150
100
50
0
2009-10
2000-1
Jan-March
April-June
July-Sep
Oct-Dec

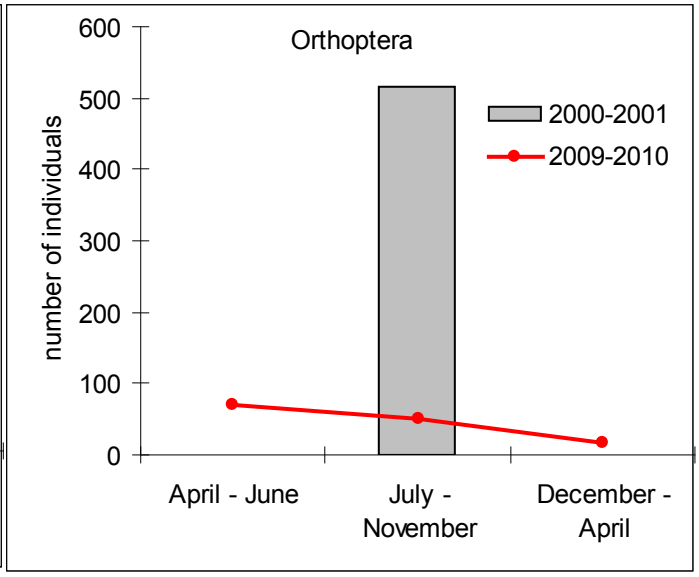

Psocoptera
number of individuals
140
120
100
80
60
40
20
0
2009-10
2000-1
Jan-March
April-June
July-Sep
Oct-Dec

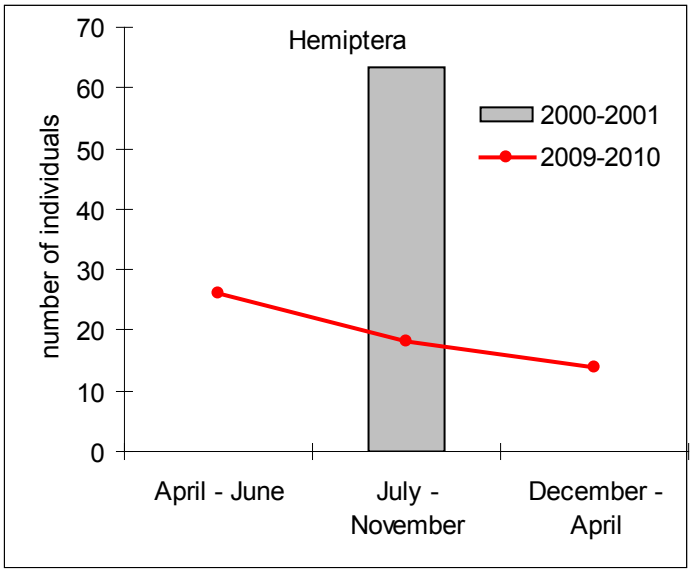

Odonata
number of individuals
2
1
0
2009-10
2000-1
Jan-March
April-June
July-Sep
Oct-Dec

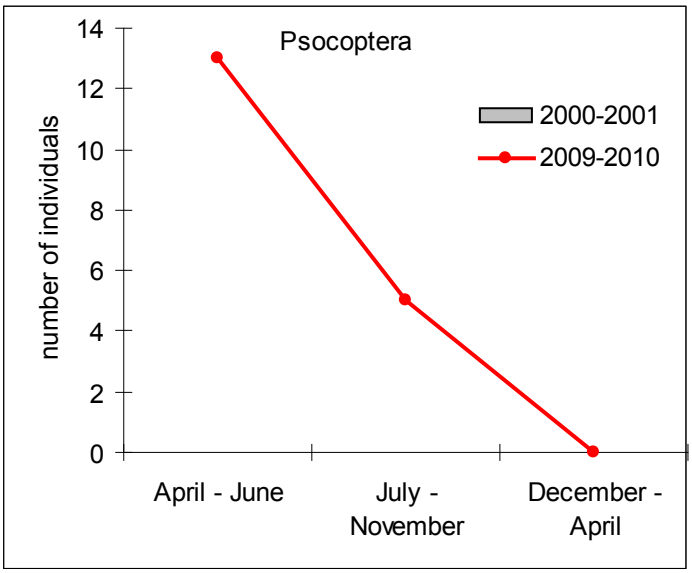

Diptera
number of individuals
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
2000-2001
2009-2010
April - June
July - November
December - April

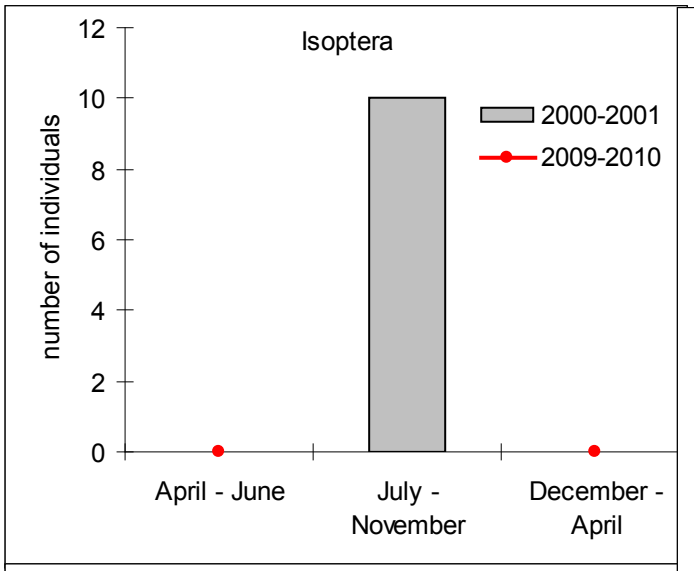

Coleoptera
number of individuals
140
120
100
80
60
40
20
0
2000-2001
2009-2010
April - June
July - November
December - April

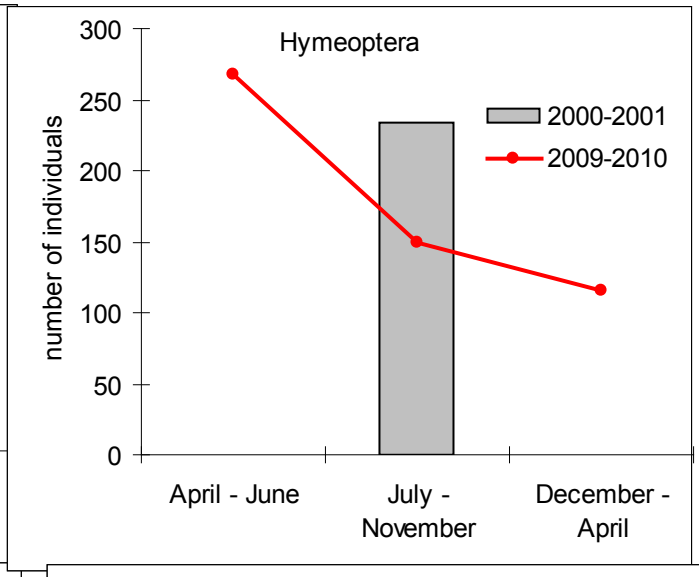

Lepidoptera
number of individuals
300
250
200
150
100
50
0
2000-2001
2009-2010
April - June
July - November
December - April

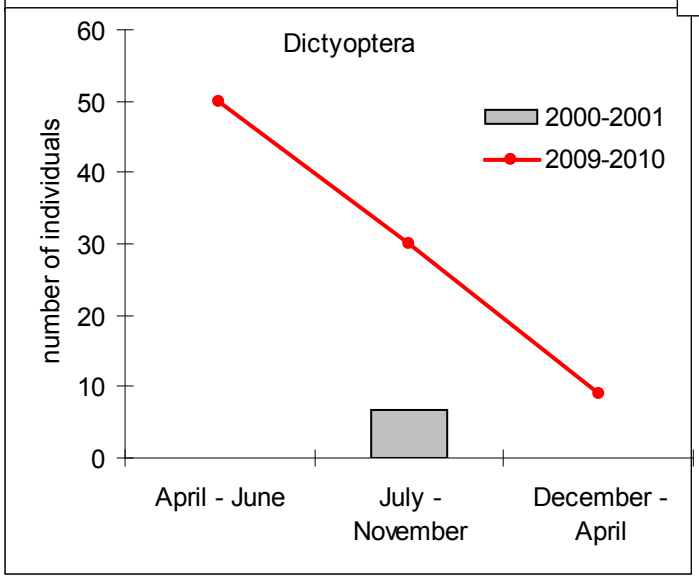

Orthoptera
number of individuals
600
500
400
300
200
100
0
2000-2001
2009-2010
April - June
July - November
December - April

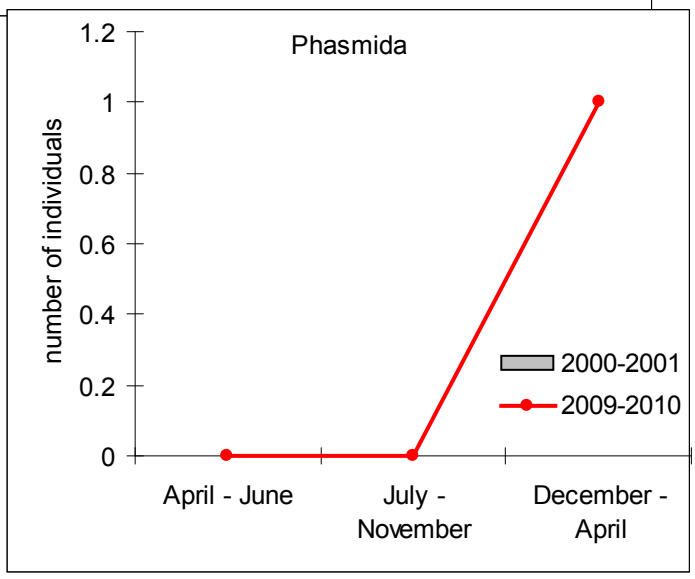

Hemiptera
number of individuals
70
60
50
40
30
20
10
0
2000-2001
2009-2010
April - June
July - November
December - April


Psocoptera
number of individuals
14
12
10
8
6
4
2
0
2000-2001
2009-2010
April - June
July - November
December - April









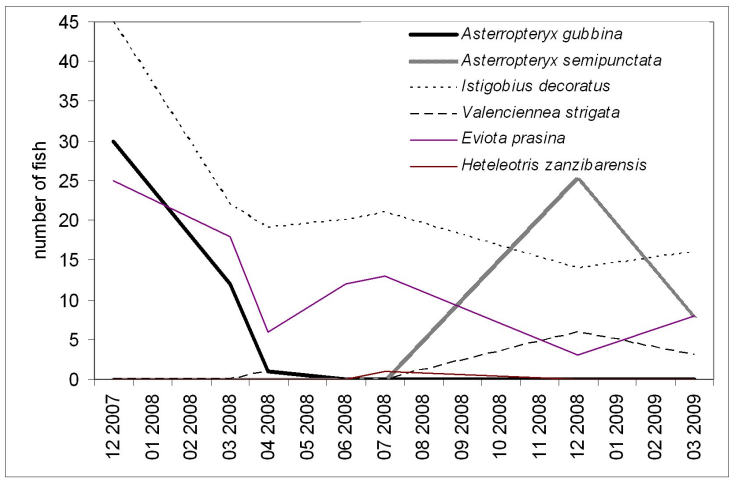
2.6. Fish and other freshwater/marine species

Reef-flat areas are monitored at La Passe for macroinvertebrates. In addition snorkelling surveys of lagoon fish are made.

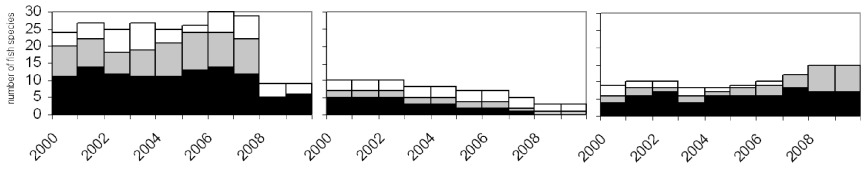
Sea cucumber populations not improving in the south, *Holothuria atra* locally common in sand areas in the north, two other species also present. Of the *Asterropteryx* gobies only *A. semipunctata* was present.

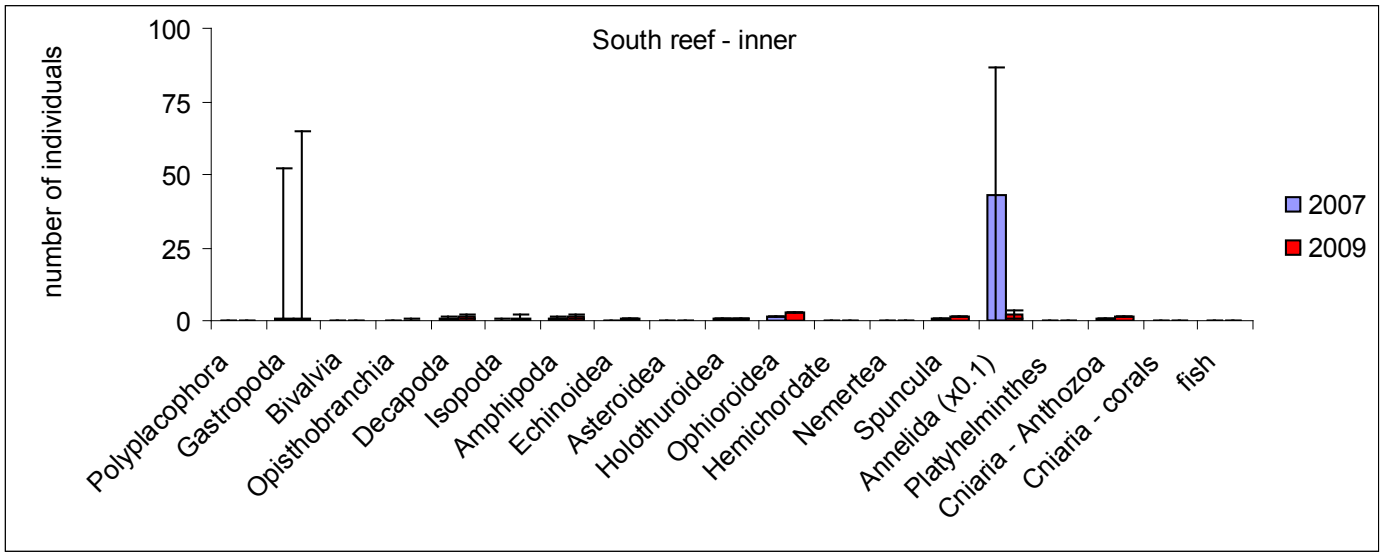
Diadema sea urchin population very low in the La Passe area, only common in harbour.

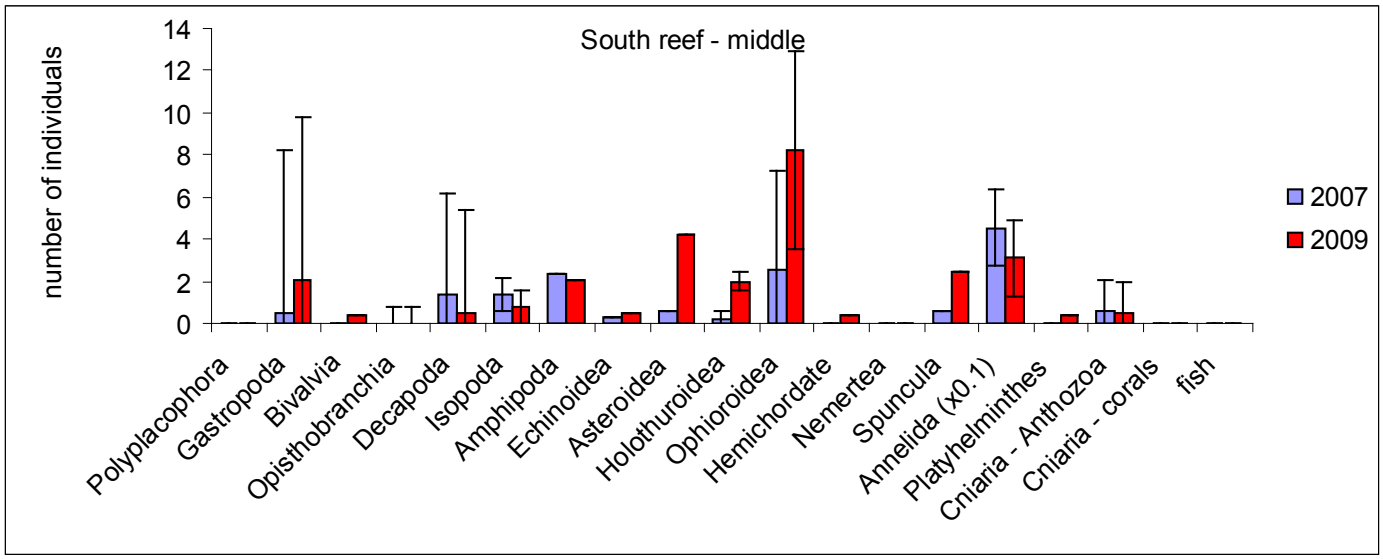
Fish population changes

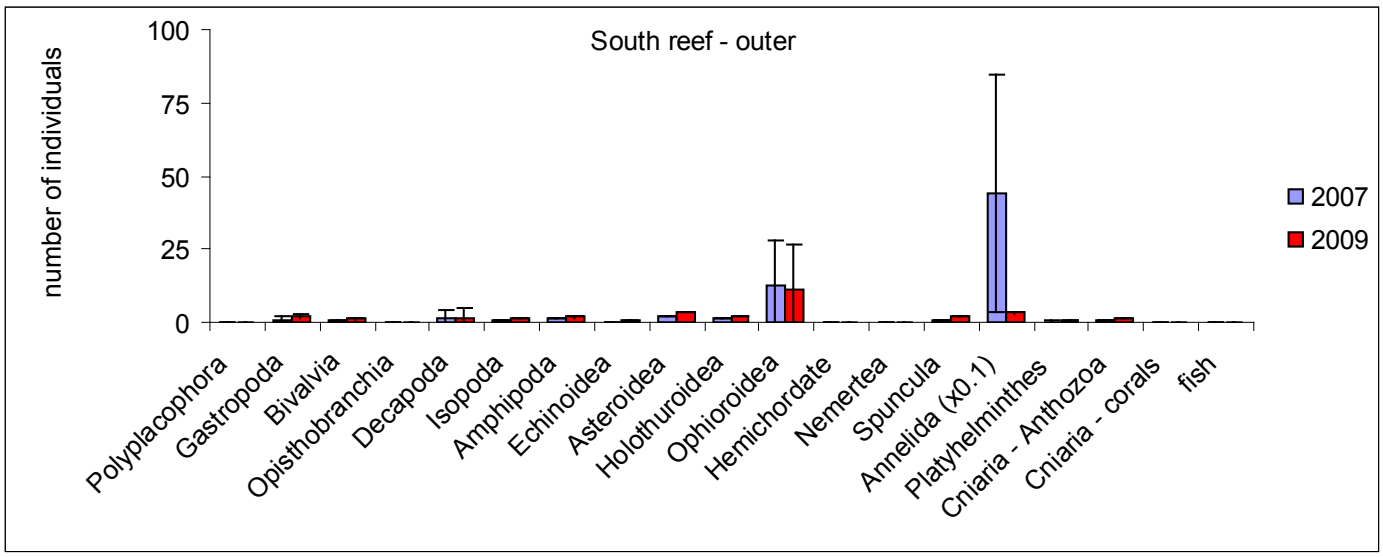


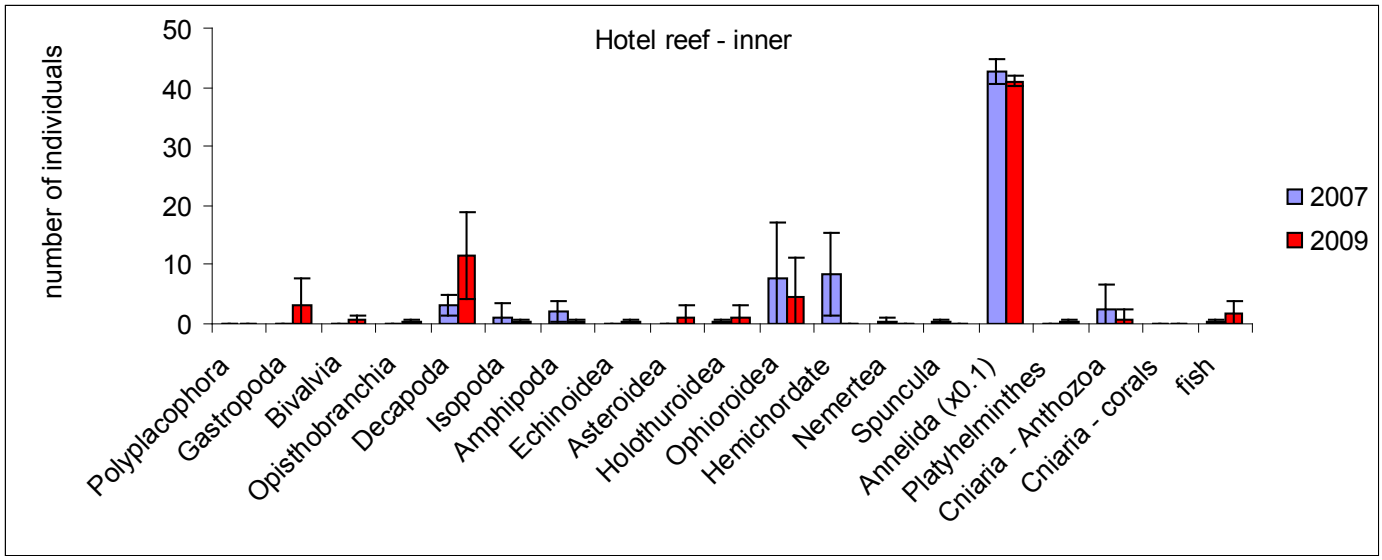
Fish diversity

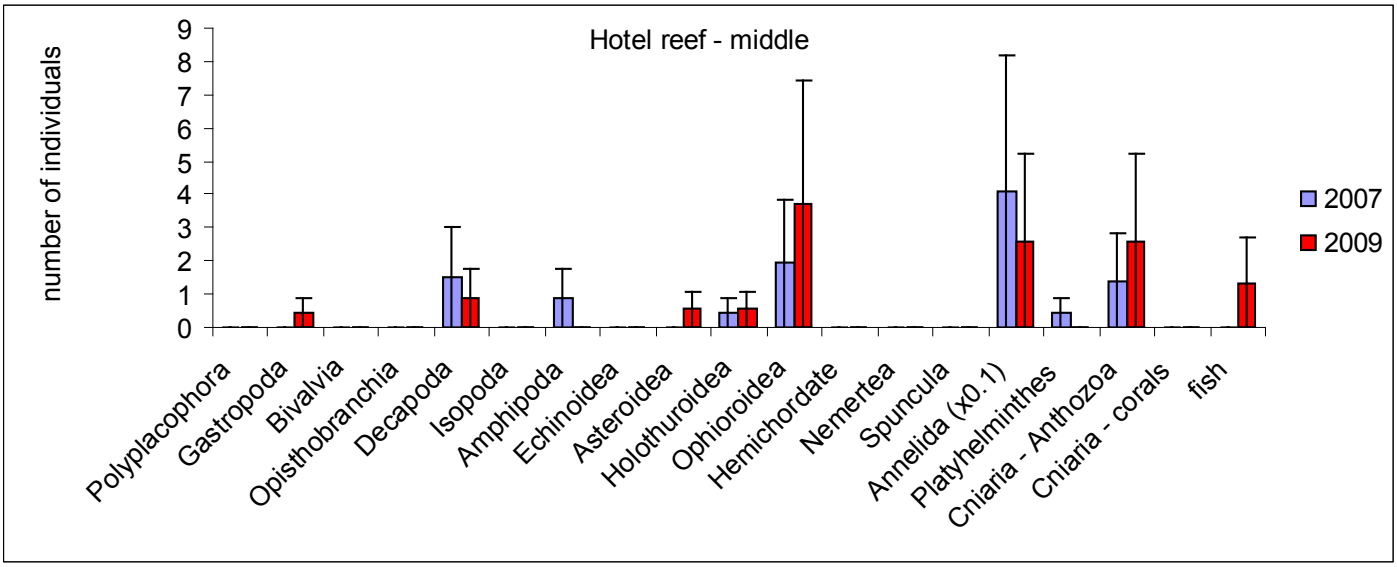


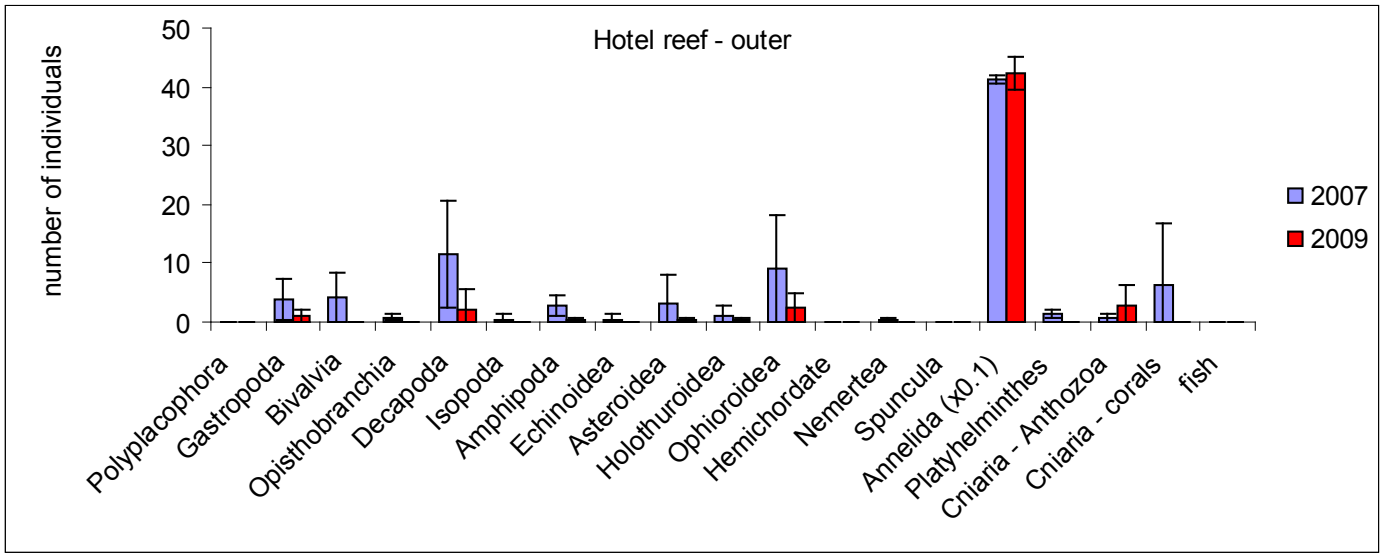

South reef - inner
number of individuals
100
75
50
25
0
2007
2009
Polyplacophora
Gastropoda
Bivalvia
Opisthobranchia
Decapoda
Isopoda
Amphipoda
Echinoidea
Asteroidea
Holothuroidea
Ophioroidea
Hemichordate
Nemertea
Spuncula
Annelida (x0.1)
Platyhelminthes
Cniaria - Anthozoa
Cniaria - corals
fish


South reef - middle
number of individuals
14
12
10
8
6
4
2
0
2007
2009
Polyplacophora
Gastropoda
Bivalvia
Opisthobranchia
Decapoda
Isopoda
Amphipoda
Echinoidea
Asteroidea
Holothuroidea
Ophioroidea
Hemichordate
Nemertea
Spuncula
Annelida (x0.1)
Platyhelminthes
Cniaria - Anthozoa
Cniaria - corals
fish


South reef - outer
number of individuals
100
75
50
25
0
2007
2009
Polyplacophora
Gastropoda
Bivalvia
Opisthobranchia
Decapoda
Isopoda
Amphipoda
Echinoidea
Asteroidea
Holothuroidea
Ophioroidea
Hemichordate
Nemertea
Spuncula
Annelida (x0.1)
Platyhelminthes
Cniaria - Anthozoa
Cniaria - corals
fish





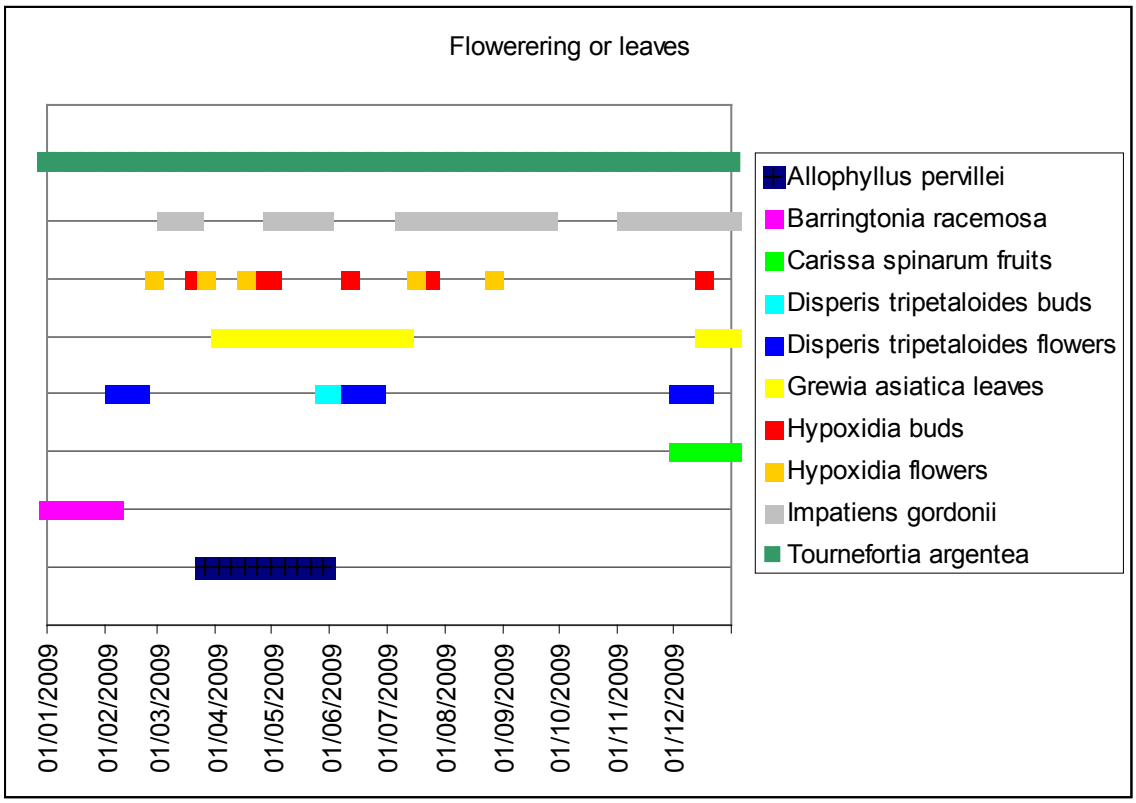


2.7. Plants

2.7.1 Phenology

Observations on flowering or leaf-fall are recorded for the rarer species.

Monitored species



Additional notes on monitored species:
Hypoxidia rhizophylla - one fruiting 3rd December,
Impatiens gordonii – plant seriously damaged by 25th March - all leaves and seed heads had been cut off. This was done deliberately and with care, it is assumed for medicinal purposes which may represent a new threat to the species. By 28th April leaves had regrown from vandalism in March. Damaged by humans again in August.

Isolated records

Agrostophyllum occidentale – abundant above Mare aux Cochons, some flowering 8th December
Colea seychellensis – flowering on Mont Dauban 8th December
Malaxis seychellensis – abundant and flowering on Mont Dauban 8th December.
Psidium cattleianum – heavy fruiting 16th March
Northea hornei – exceptionally large numbers of small seedlings on Grande Barbe path in December
Wielandia elegans – flowering 17th December
Soulamea terminaloides - flowering March
Psychotria pervillei - flowering March
Cerbera manghas - flowering March
Platylepis seychellarum - flowering at Mon Plaisir 29th March, many flowering above Mare aux Cochons 8th December
Platylepis goodyeroides – at Gratte Fesse flowering 7th July, one flower spike developing 17th December

2.7.2. New records

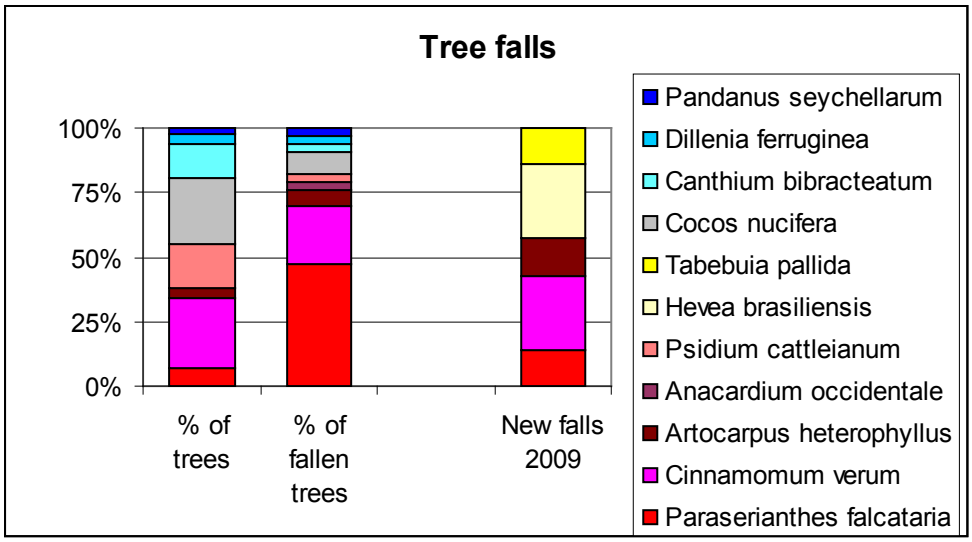
Peperomia pellucida - found at La Passe from 22nd March.
Pisonia seychellarum – located to the south of Mont Dauban in November.
Amaracarpus pubescens – one tree located to the south of Mont Dauban in November and above Mare aux Cochons in December.

2.7.3. Observations of selected species
Observations are recorded for rare native species and selected invasives.
Invasives:
Alstonia macrophylla - 1 mature tree ring-barked above La Passe, 7 saplings removed from La Passe. Several seen on Mt. Cocos Marrons.
Falcataria moluccana (Paraserianthes) – plants on ridge of Mon Plaisir all dead or dying by end of March. This appears to be due to trees reaching a size at which insufficient moisture can be drawn up from the soil. No young trees found in the area.
Rare native species:
Carissa spinarum – seedlings planted in 2008 growing well in full sun), those in shade have not grown and have lost most leaves. A tree grown from seed at La Passe fruited for the first time, producing 6 fruits. Seeds took 16-17 days to germinate. A mature tree was found at Jardin Marron on 4th July.

Sophora tormentosa – known from two mature plants at the start of 2009 (one at Grande Barbe and one planted at La Passe) and a seedling at La Passe. Both La Passe plants died in 2009, but seedlings were found in the neglected garden area of La Belle Tortue.

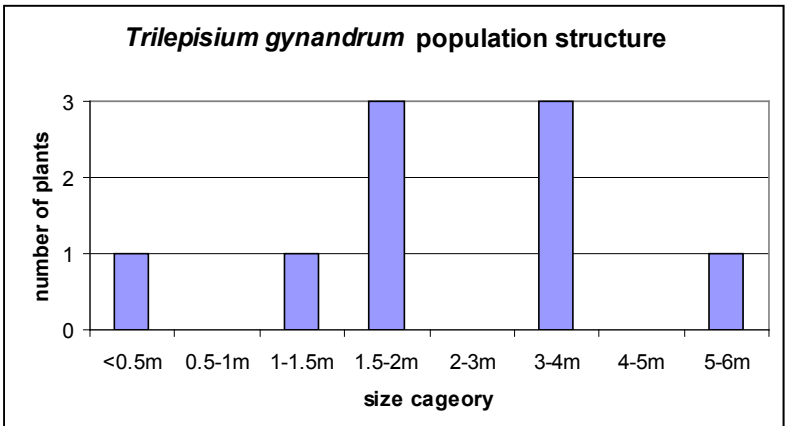
2.7.4. Tree falls

Tree falls on the forest paths are recorded and compared to data from 1997-2007. A distinction is made between native and invasive trees.



2.7.2 Monitoring

Plant diversity is monitored in several permanent plots. These are reported under Habitats (section 3). Species monitoring was carried out for *Trilepisium gynandrum* at Gratte Fesse:



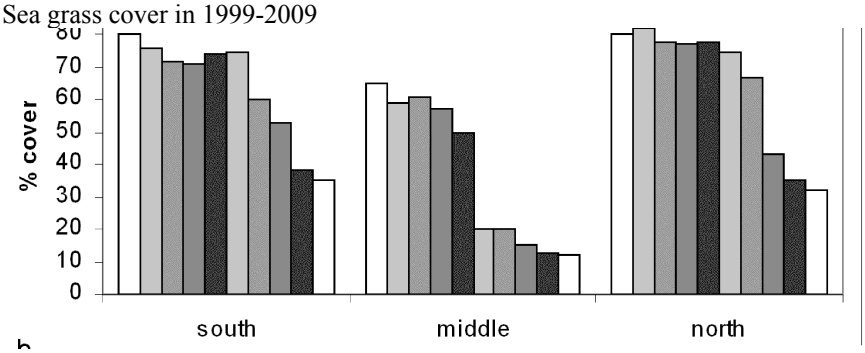
3. HABITATS

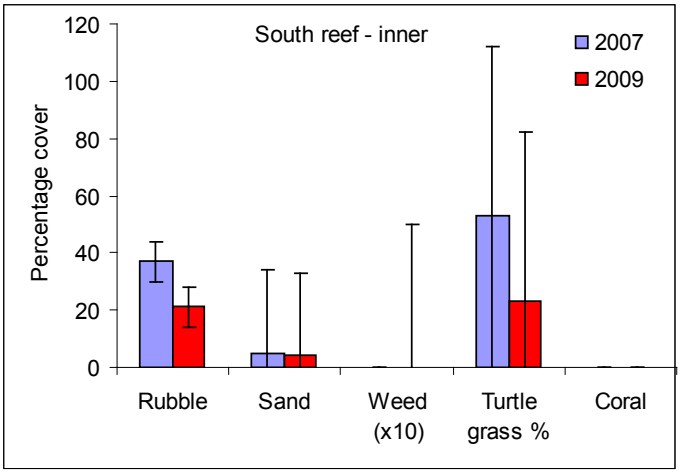
3.1. Marine

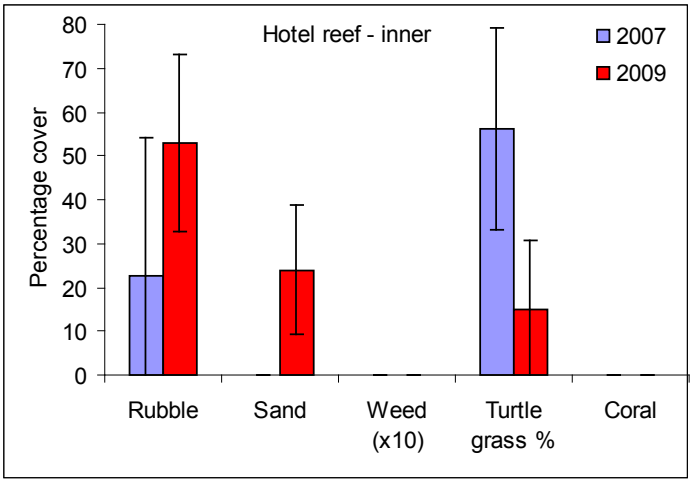
Reef-flat areas are monitored at La Passe; sea grass and coral cover are estimated.

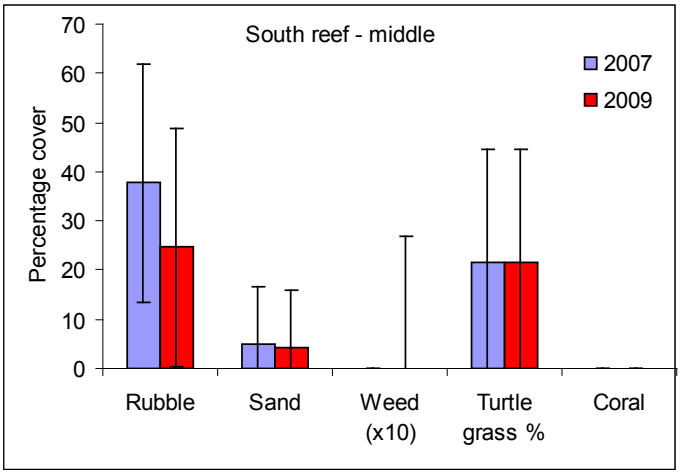
Turtle grass beds show fresh growth at the south end, but dramatic deterioration in the north. Continued fresh sea-grass growth in some areas of the south but most eroding rapidly. The area of reef flat now appears to have been reduced by approximately 30% in the past year. Lagoon siltation is apparent.

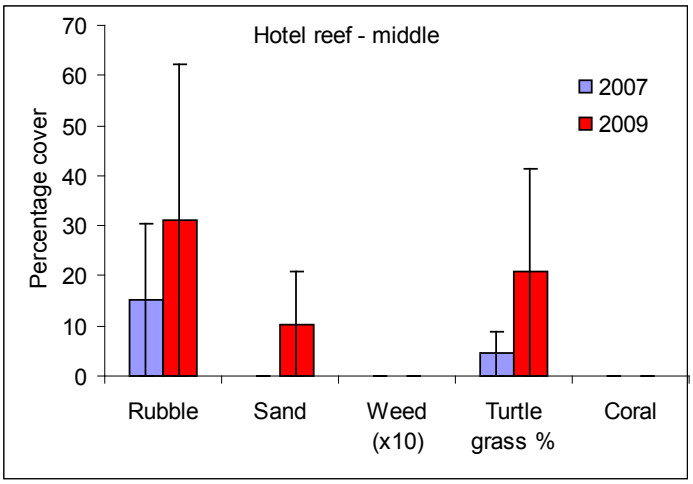
Sea grass cover in 1999-2009

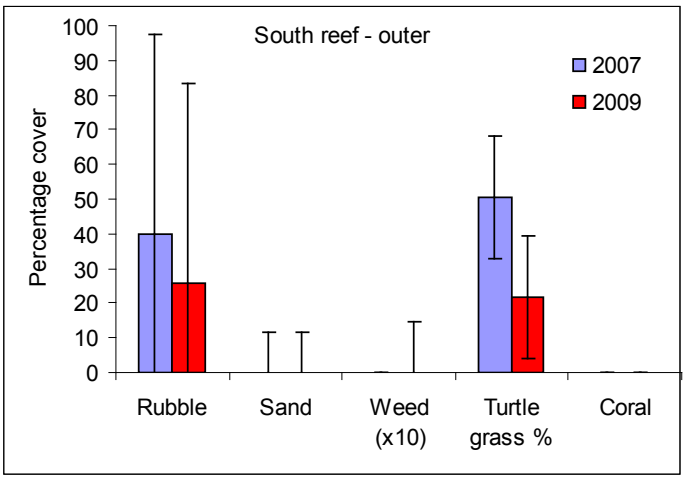


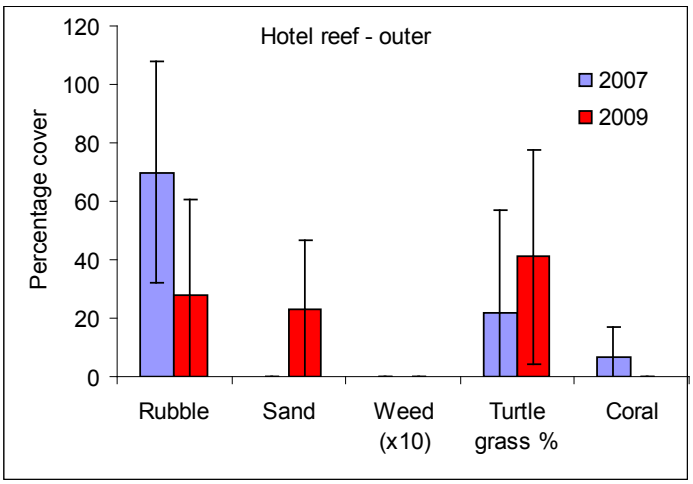

South reef - inner
2007
2009
Percentage cover
120
100
80
60
40
20
0
Rubble
Sand
Weed (x10)
Turtle grass %
Coral


Hotel reef - inner
2007
2009
Percentage cover
80
70
60
50
40
30
20
10
0
Rubble
Sand
Weed (x10)
Turtle grass %
Coral

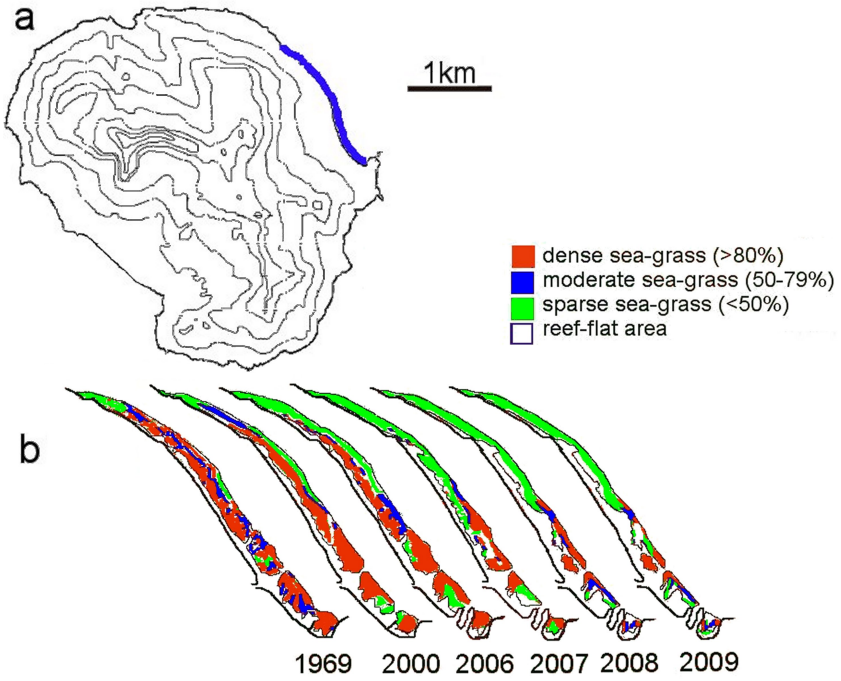

South reef - middle
2007
2009
Percentage cover
70
60
50
40
30
20
10
0
Rubble
Sand
Weed (x10)
Turtle grass %
Coral


Hotel reef - middle
2007
2009
Percentage cover
70
60
50
40
30
20
10
0
Rubble
Sand
Weed (x10)
Turtle grass %
Coral


South reef - outer
2007
2009
Percentage cover
100
90
80
70
60
50
40
30
20
10
0
Rubble
Sand
Weed (x10)
Turtle grass %
Coral


Hotel reef - outer
2007
2009
Percentage cover
120
100
80
60
40
20
0
Rubble
Sand
Weed (x10)
Turtle grass %
Coral

Sea grass cover changes at La Passe



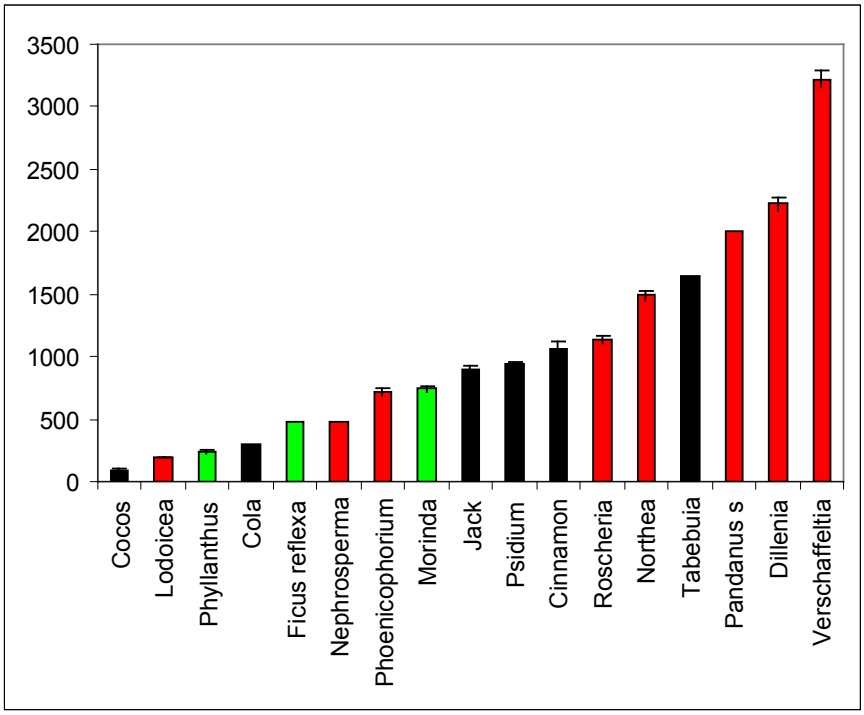
3.2. Forests

3.2.1. Monitoring

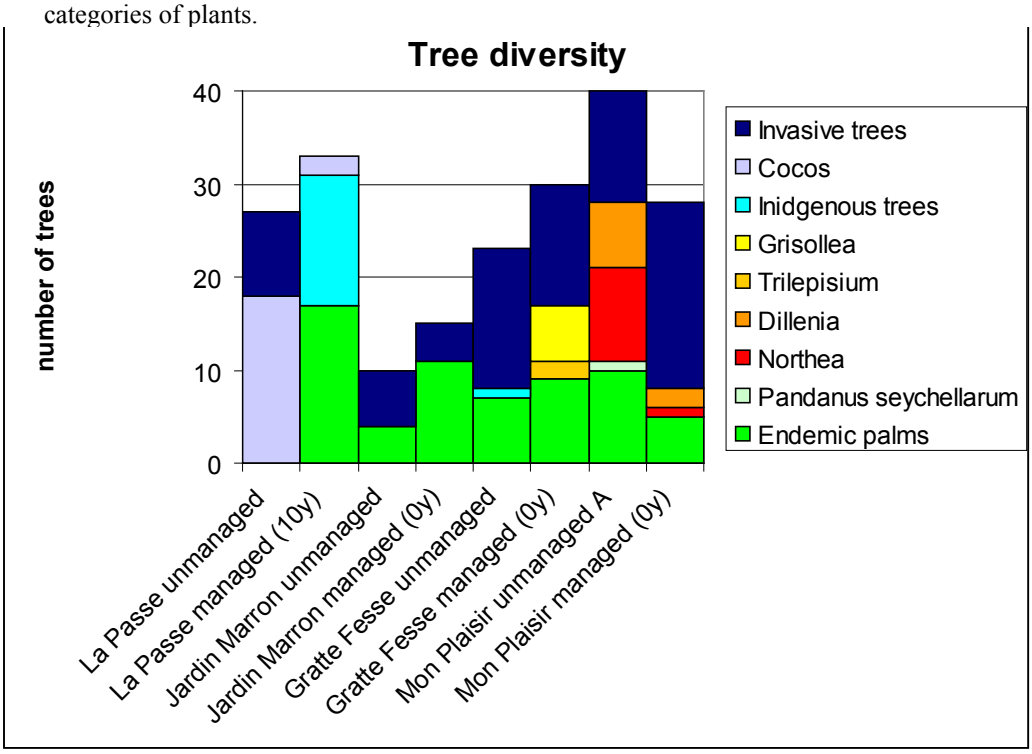
Permanent monitoring plots were established at La Passe, Jardin Marron, Gratte Fesse and Mon Plaisir. Each site comprises an unmanaged area of 25x10m and a managed area of 25x10m. In the managed area invasive plants are gradually removed. Management at La Passe started in 1998, at the other sites managed plots were established in 2009 (Jardin Marron) or will be managed in 2010 (Gratte Fesse and Mon Plaisir). Annual or biannual monitoring of vegetation is carried out at each site, in addition the same sites are used for animal monitoring and climate recording. A one-off study of soil temperature was also made at two of the sites (using 5 points at each site):

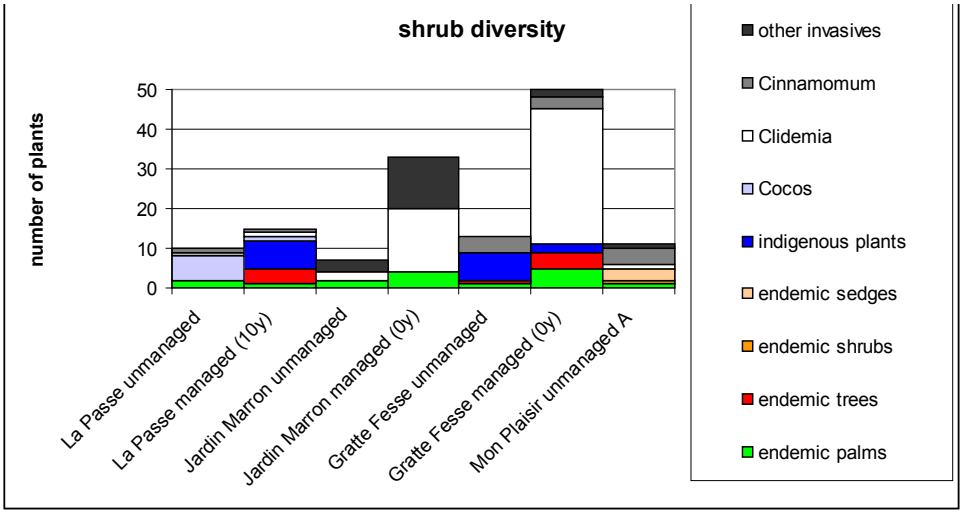
Site	Soil temperature (C mean ± sd)
La Passe unamanged (under coconut plantation)	29.0±0.71
La Passe managed (restored habitat)	29.4±0.55
Mon Plaisir	24.7±1.60

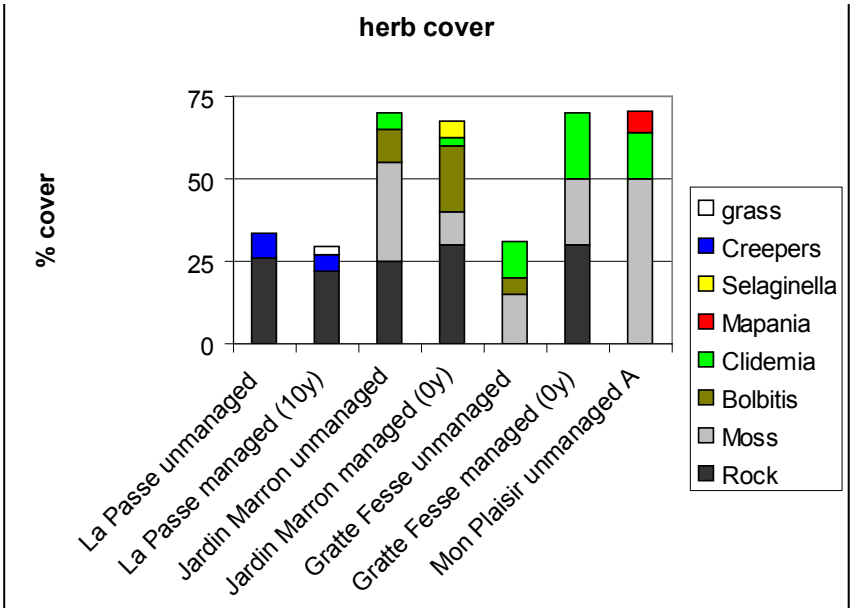
A study of light levels (lux values) under different tree species was carried out in the monitoring plots:



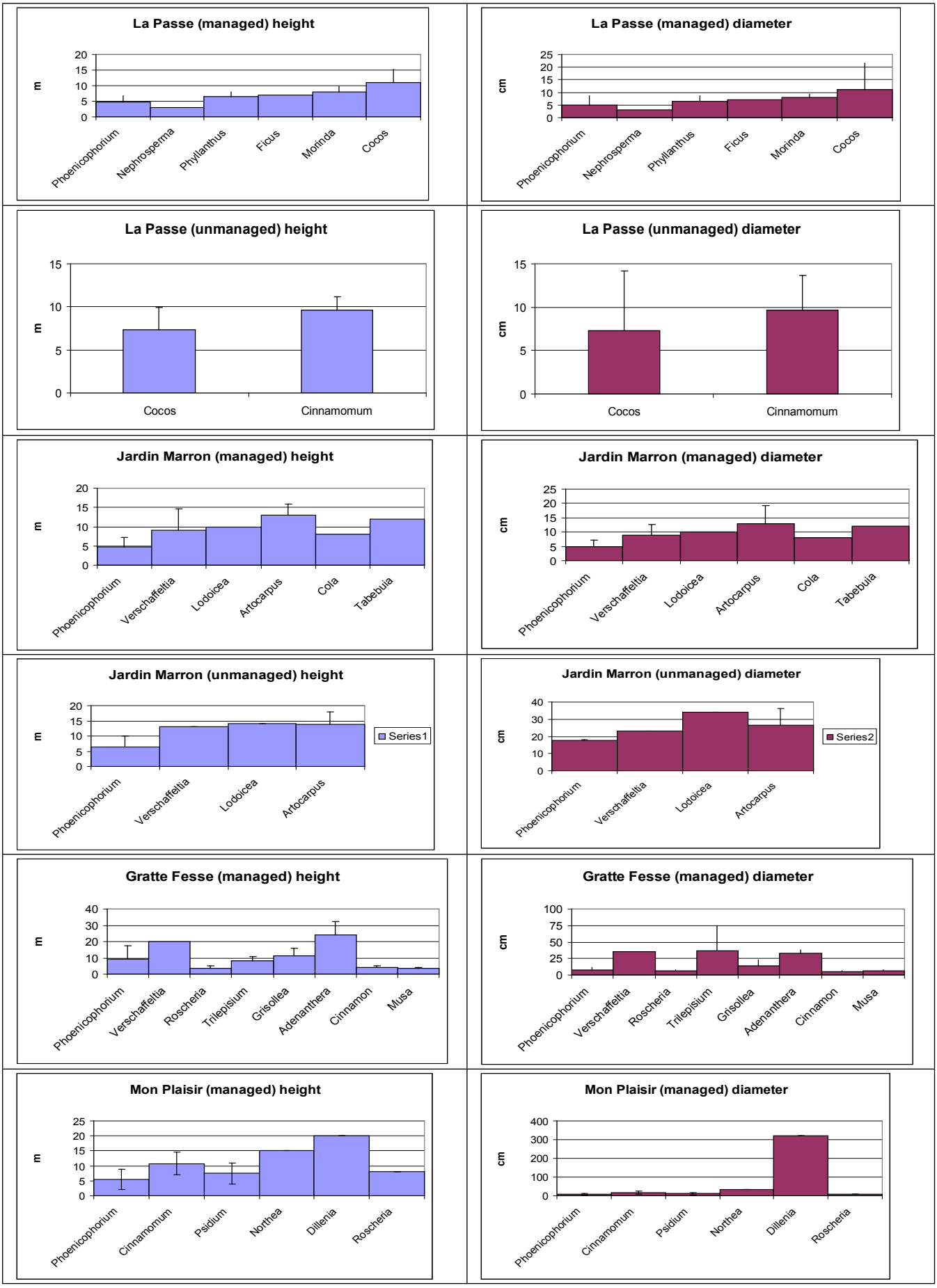
In each plot all trees are identified and measured (height and dbh), all shrubs (>1m high, dbh <5cm) counted and the percentage cover of herbs recorded. The results are summarised below showing differences between endemic tree species and other categories of plants.







Height and diameter data:



3.3.2. Lowland woodland

Monitoring sites established at La Passe – unmanaged, and managed (rehabilitation started in 1998).

3.3.3. Mid-altitude forest

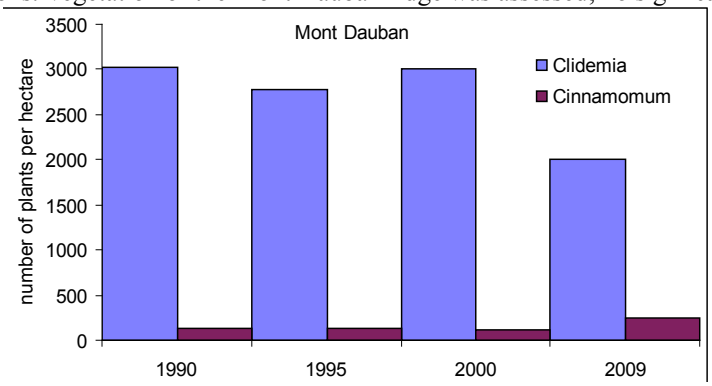
Monitoring sites established at Jardin Marron and Gratte Fesse. Surveys carried out from Anse Patates river to the peak south of Mt. Corgat (27th March). This recorded *Verschaffeltia splendida, Roscheria melanochaetes, Pandanus seychellarum, P. hornei* and *Begonia seychellensis* just above the Anse Patates shrine. *Drypetes risleyi* abundant on summit and between peak and Mt. Cocos Marrons. *Soulamea terminaloides* and *Cerbera manghas* on summit. *Rhipsalis* flowering. *Alstonia macrophylla* present on Mt. Cocos Marrons. One breadfruit tree between peaks.

Mare aux Cochons was visited on 8th December: dense growth of coffee remains present. Drainage ditches largely silted up and reverting to marshy conditions in south-west. *Pachypanchax playfairi* present in some drainage ditches and in the river. Below Mare aux Cochons one mahogany tree was found and several seedlings of *Trilepisium*.

3.3.4. High forest

Monitoring sites established at Mon Plaisir. Survey at Mon Plaisir (29th March) noted that conditions were very dry with complete dehydration of moss and most litter, persisting until late in the year. Dry conditions have never been recorded at this altitude previously. On 30th June an *Ixora pudica* sapling was located.

Mont Dauban visited on 8th December: 2 *Rapanea seychellarum* seen, vegetation in good condition. *Clidemia* highly abundant. Some dead *Northea* on narrowest ridge. Between Mont Dauban and Mare aux Cochons: orchids abundant, *Amaracarpus* and *Achyrospermum* found above Mare aux Cochons. Many very tall (6m) *Cyathea* on Mont Dauban and above Mare aux Cochons. Vegetation of the Mont Dauban ridge was assessed; no signficant increases in invasion.



3.3. Wetland

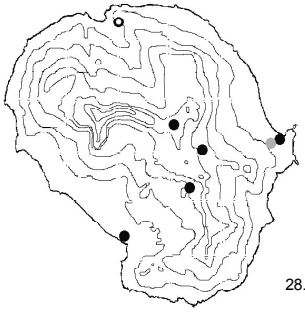
Salinity was recorded in marshes in December.

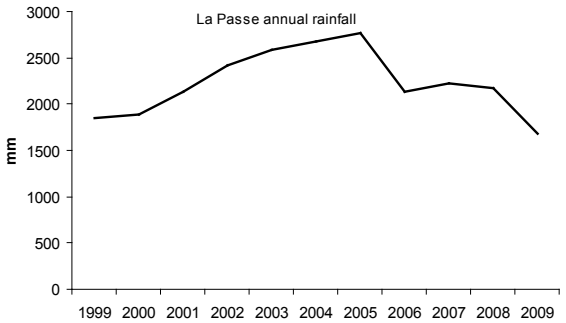
Site		Salinity (ppm)
La Passe	main marsh	1977-2000ppm
	freshwater inflow	37
	river channel at Labriz	>2000
	channel behind Labriz	131
Anse Patates		230

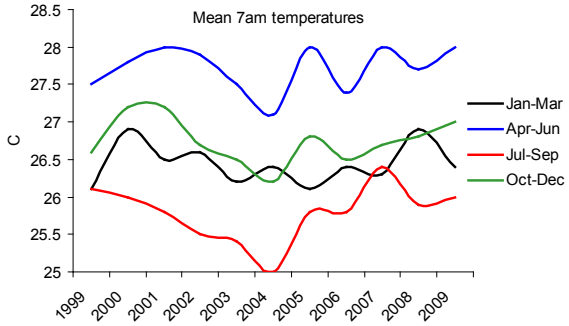
3.6. Climate

Climate data recorded at La Passe (rainfall and temperature from 1998 at sea-level and temperature from 2004 at bat roost), Jardin Marron (rainfall and temperature), Gratte Fesse (rainfall and temperature) and Grande Barbe (rainfall and temperature).

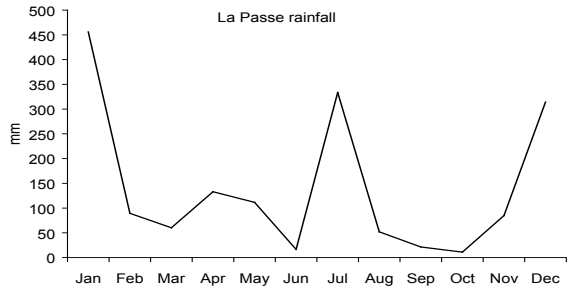
Location of climate monitoring sites: black – rain & temperature, grey – temperature, open circle – to be established in 2010, and La Passe data 1999-2009:

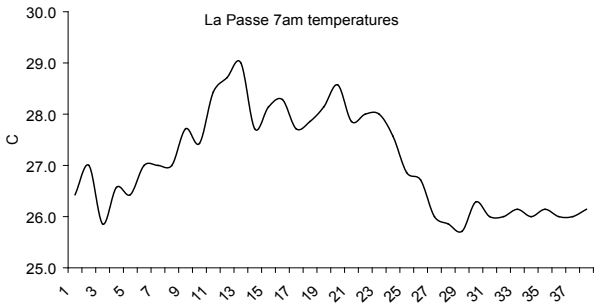


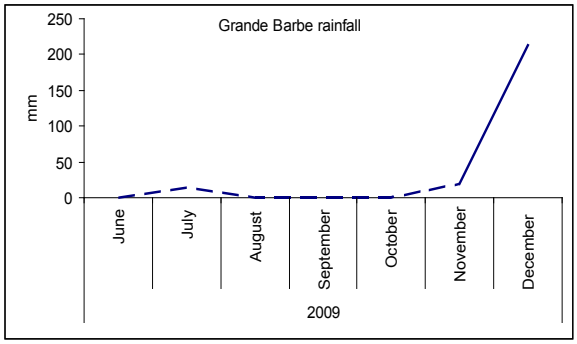


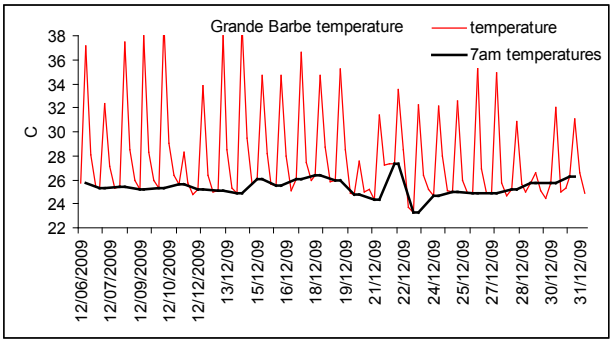


Climate data for each site:

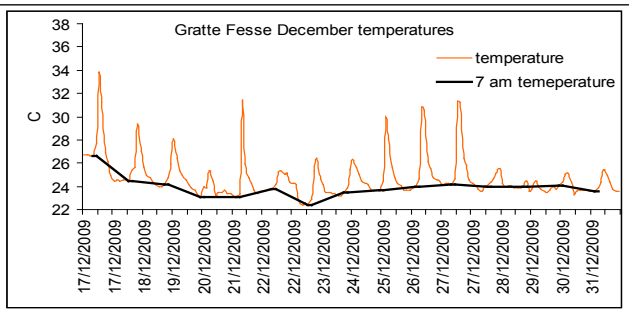


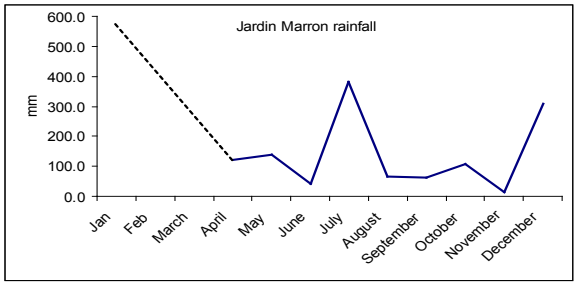


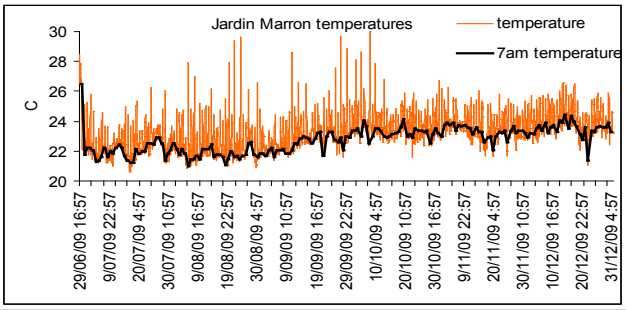




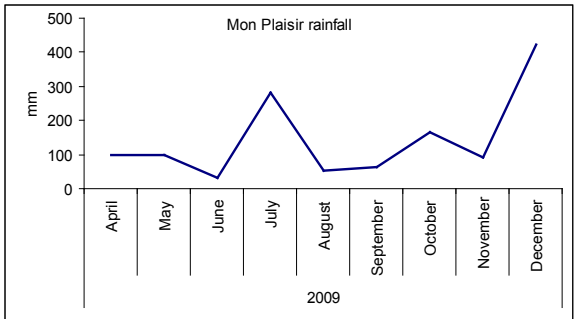
Gratte Fesse half of December rainfall = 208mm

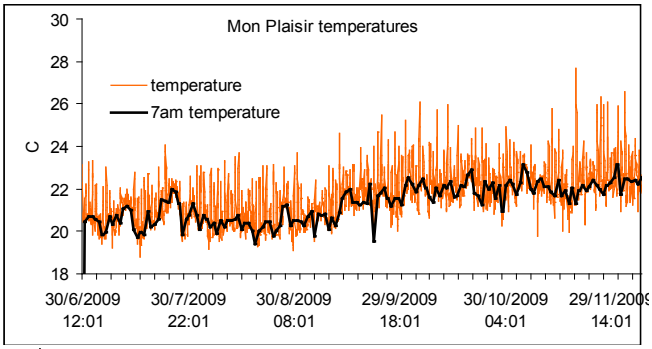


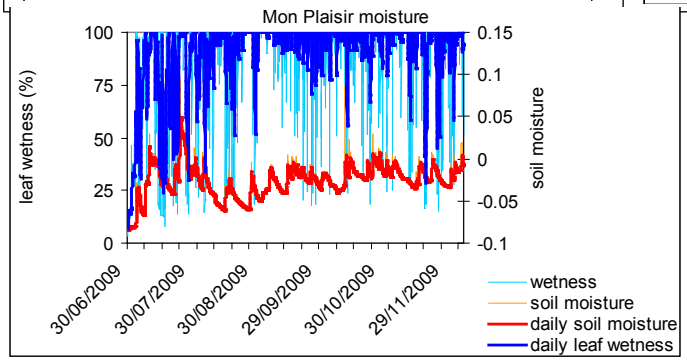




Mon Plaisir December rainfall data partial







4. ENVIRONMENTAL MANAGEMENT

Management was carried out at La Passe and Jardin Marron.

La Passe – maintenance and expansion of forest rehabilitation area started in 1998. This was undertaken with assistance from gardeners from Labriz. Experimental use of Glyphosate weedkiller in addition to ring-barking was tried on *Cinnamomum verum* and *Tabebuia pallida*. Weedkiller was found to prevent bark regrowth but not suckering of large trees. Saplings appeared more affected. Weedkiller in the absence of throrough ring-barking was not effective. Self-seeded *Ochorosia oppositifolia, Tarenna seychellarum* and *Heritiera littoralis* were found, all from trees planted as seed in 1999-2002. *Rothmannia annae* seedling planted in 2006 were removed from the forest rehabilitation area in July as they were in shade and not growing. These were replanted in December having reached 30-40cm height.

Jardin Marron – felling of *Cola nitida* trees and removal of seedlings in one permanent monitoring plot.