



Meeting the challenges of conserving primate diversity

Niche Conservatism and Conservation Biology of *Lepilemur* in Northwest Madagascar

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Bristol Zoological
Society
Saving Wildlife Together





I. Context

II. PhD project

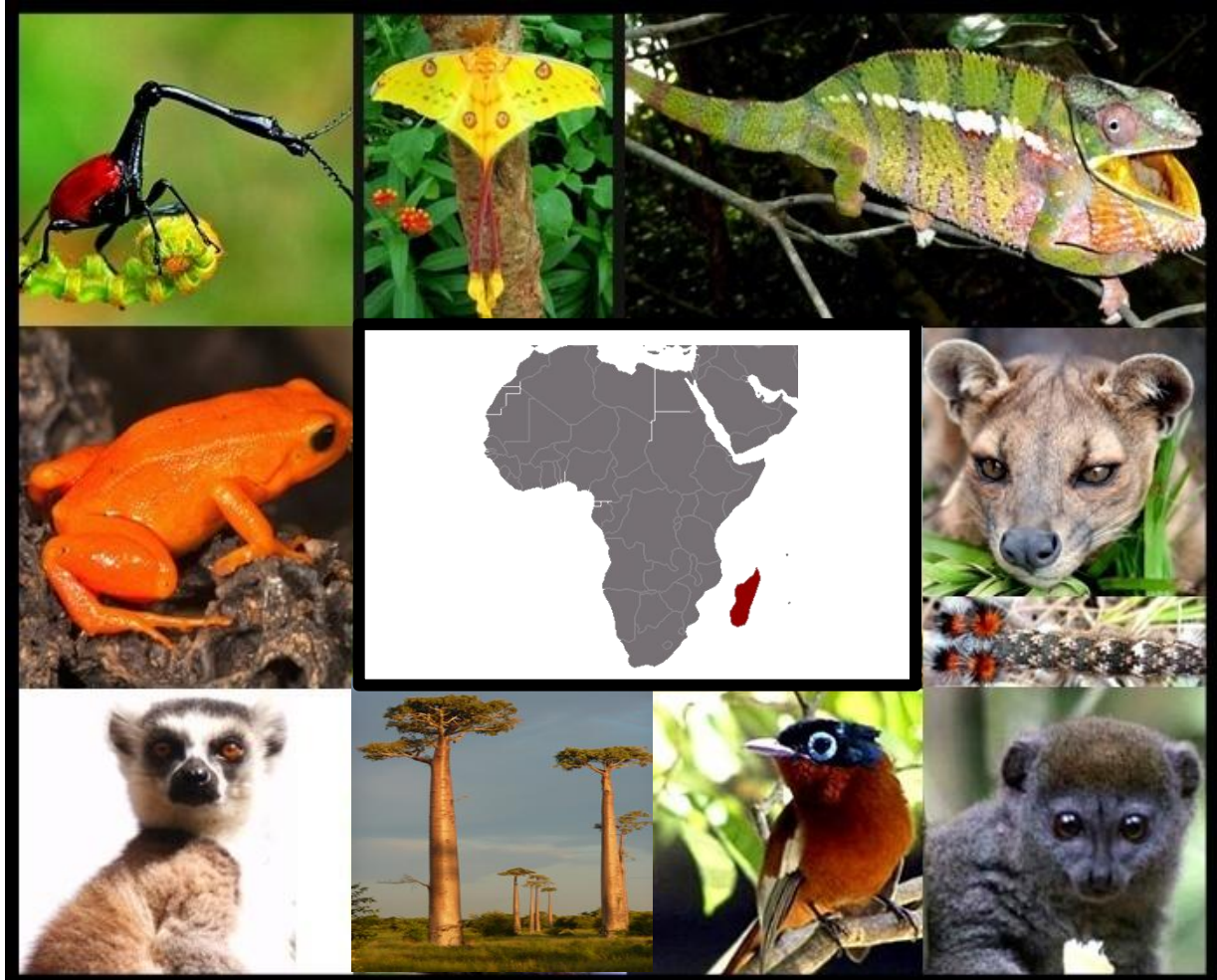
III. Exploratory mission

IV. Perspectives

Madagascar

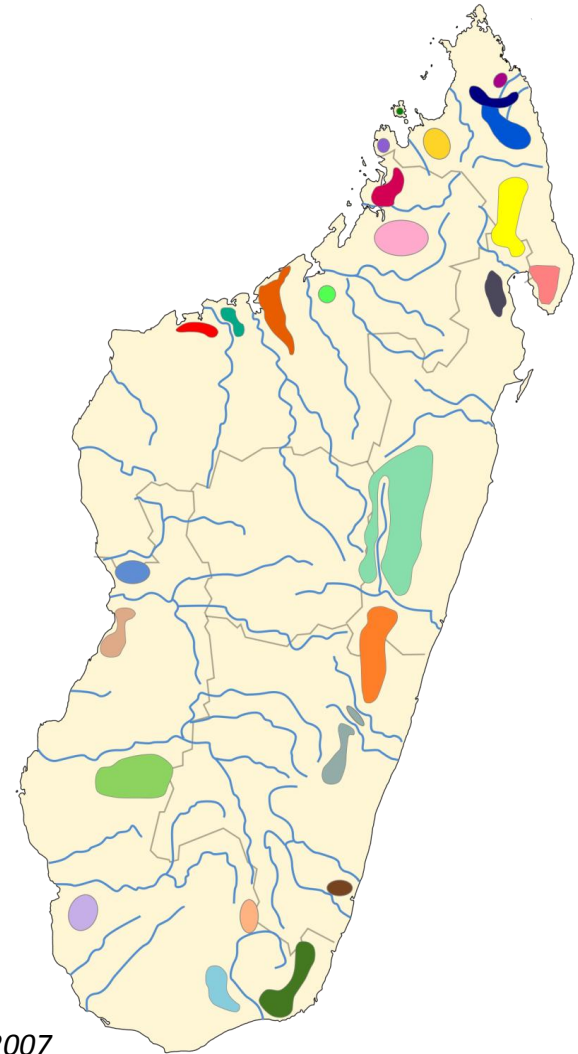
→ High biodiversity
 → High endemism

} Hotspot



Genus *Lepilemur*

- ✓ 26 species
- ✓ Folivorous, nocturnal
- ✓ Exclusively arboreal
- ✓ Small area of distribution



Craul *et al.*, 2007

Genus *Lepilemur*

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- ✓ Folivorous, nocturnal
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LEPILEMUR

Threats

Human -caused disturbances:

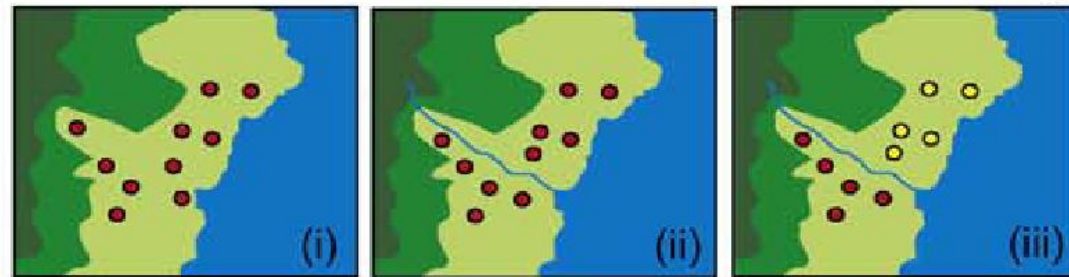
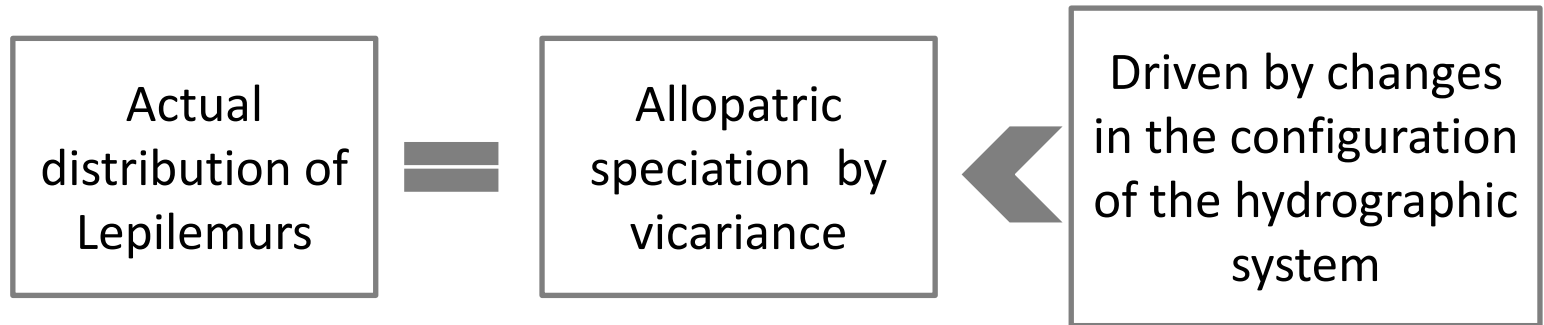
- ✓ Poaching
- ✓ Destruction and fragmentation of natural habitat



Threatened of extinction (IUCN)



General framework



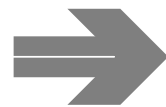
Vences *et al.*, 2009

Hypothesis

Fundamental habitat
is maintained



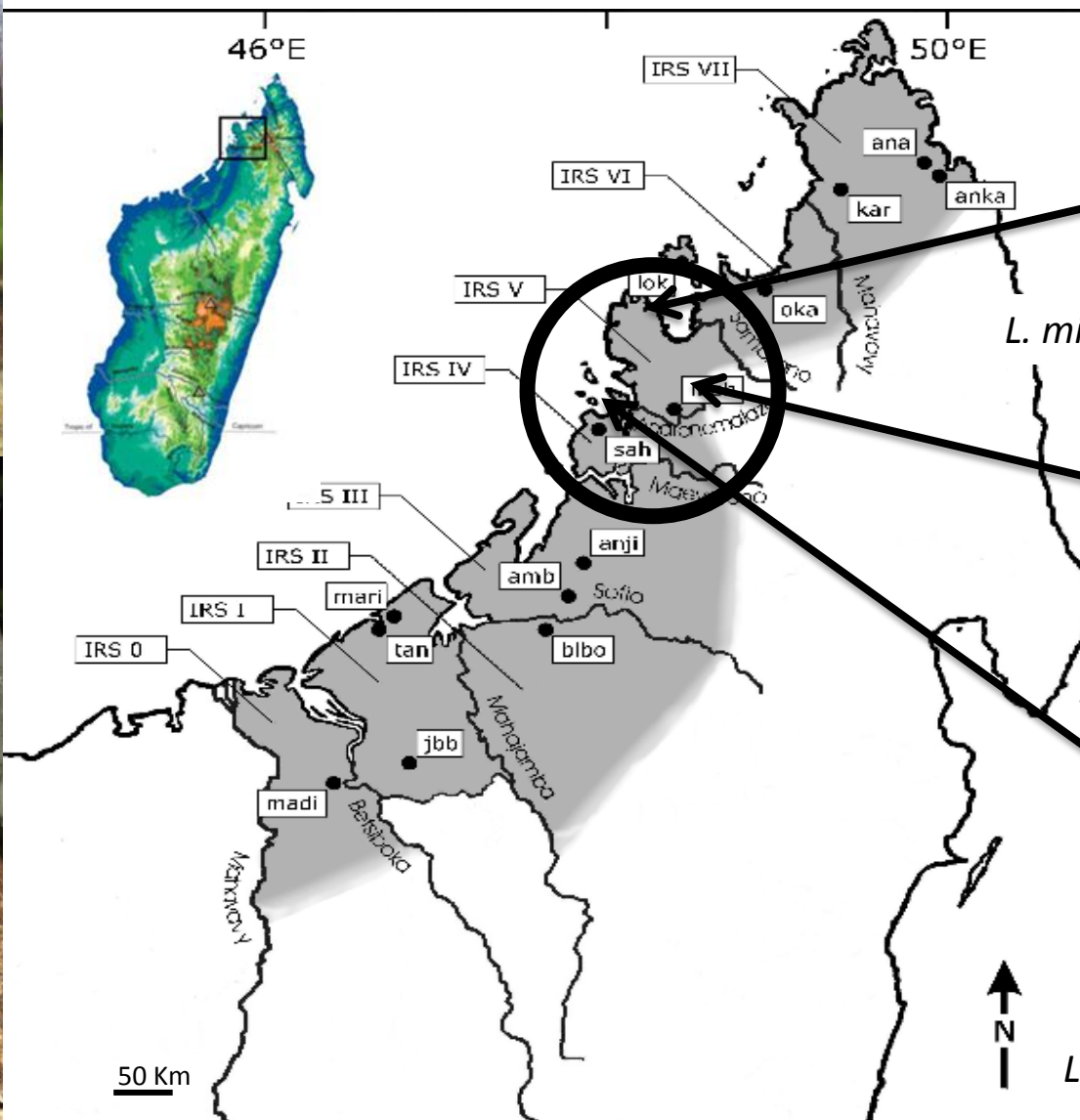
No niche
modification due to
speciation process




**NICHE
CONSERVATISM**



Study sites and studied species



Studied species



*Lepilemur
mittermeieri*

*Lepilemur
sahamalazensis*

*Lepilemur
dorsalis*

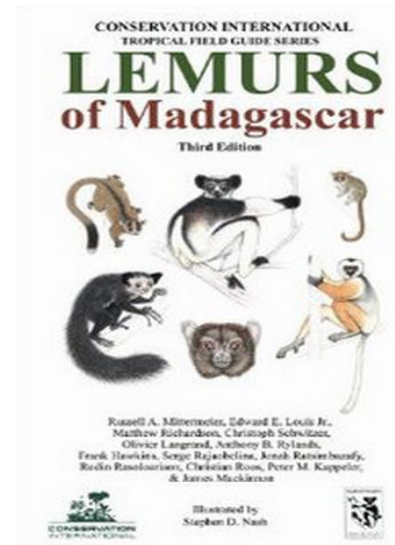
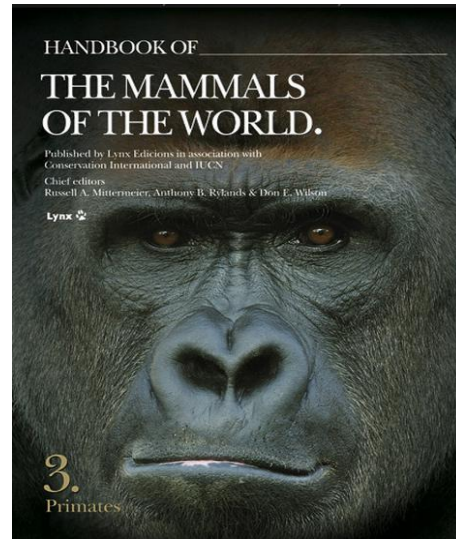
Studied species

Never been studied

Lepilemur mittermeieri

Lepilemur sahamalazensis

Lepilemur dorsalis



Studied species

Never been studied

Lepilemur mittermeieri

Lemur News Vol. 11, 2006

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Cytogenetic and molecular characteristics of a new species of sportive lemur from Northern Madagascar

Clément Rabarivola¹, Alphonse Zaramody¹, Jean-Luc Fausser², Nicole Andriaholinirina^{2,3}, Christian Roos^{4,5}, Dietmar Zinner⁶, Hauwy Marcel², Yves Rumpler^{2*}

- ✓ 3 animals collected
- ✓ Molecular investigation
- ✓ Ampasindava Peninsula

Studied species

Never been studied

Lepilemur dorsalis

Known to occur in
✓ The Sofia Region
✓ Manongarivo S.Reserve



Studied species

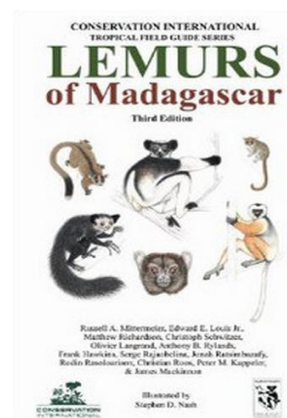
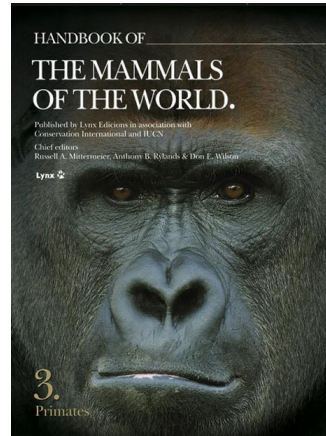
Never been studied

Lepilemur mittermeieri

Lepilemur sahamalazensis

Lepilemur dorsalis

Investigation in the distribution area



Objectives

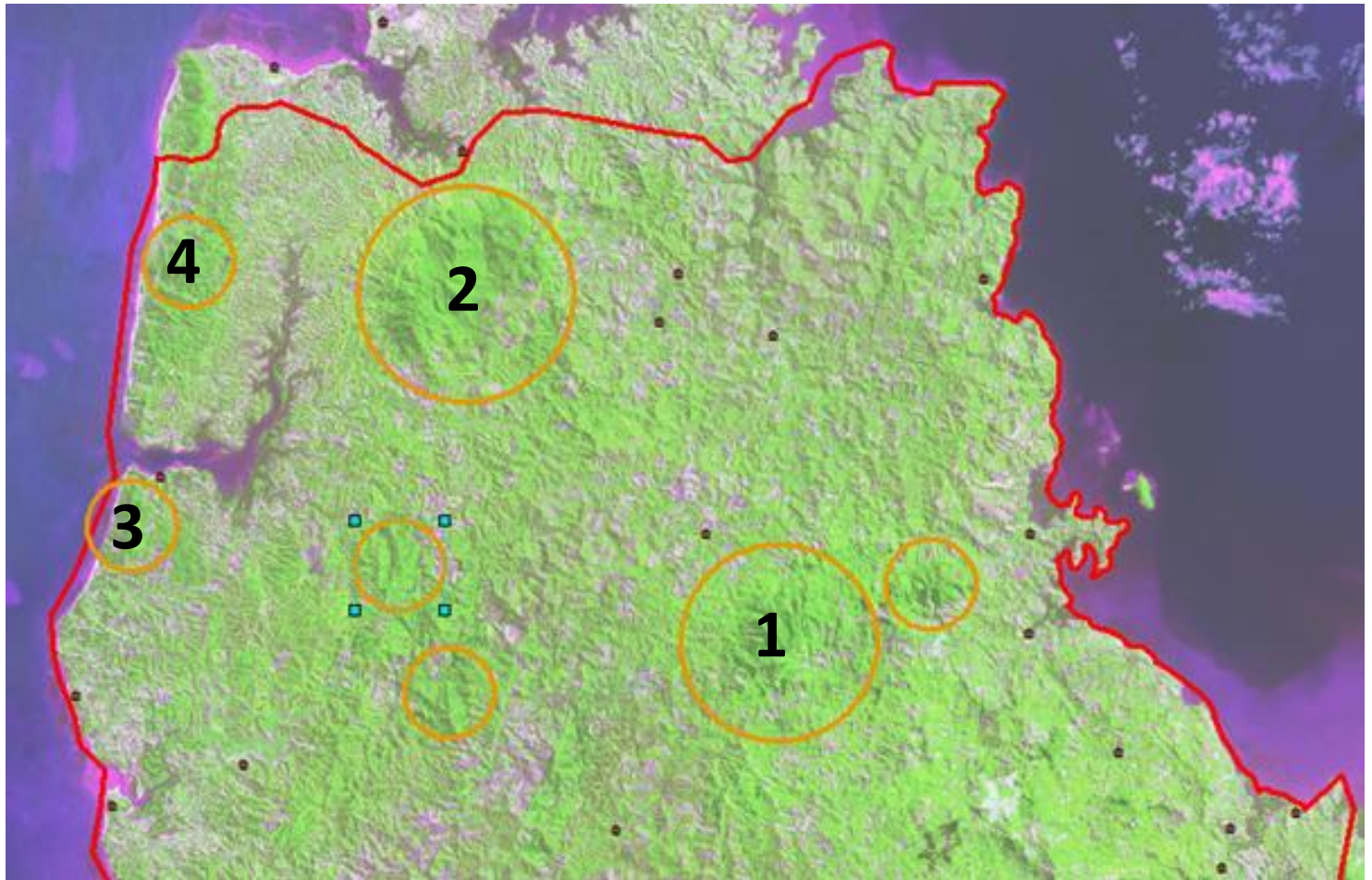
Almost unknown
Lepilemur species

To evaluate
their
abundance

To investigate
sleeping sites
characteristics



L.mittermeieri – Ampasindava Peninsula: Study site



⇒ 4 sites : 1 transect/ 3 transects/ 2 transects/ 2 transects

⇒ Height >< low elevation



L.mittermeieri – Ampasindava Peninsula: study sites



Site n°2 – 3 transects

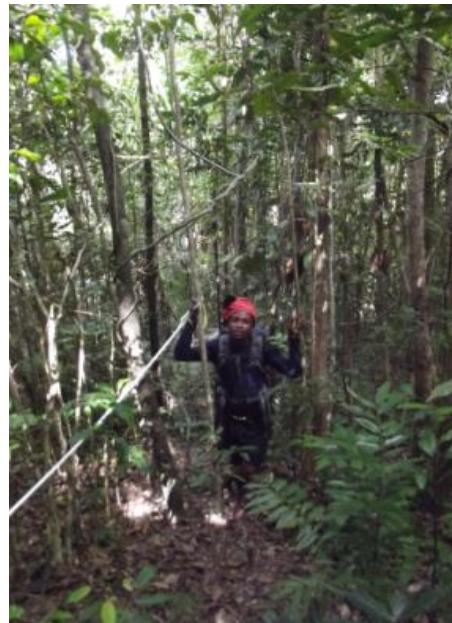


Site n°4 – 2 transects

L.mittermeieri – Ampasindava Peninsula: method

Method

- ✓ Night survey – transect method
- ✓ 3 observers
- ✓ Detection by eye shine – vocalisation
- ✓ Data collection
- ✓ 3 repetitions/transect



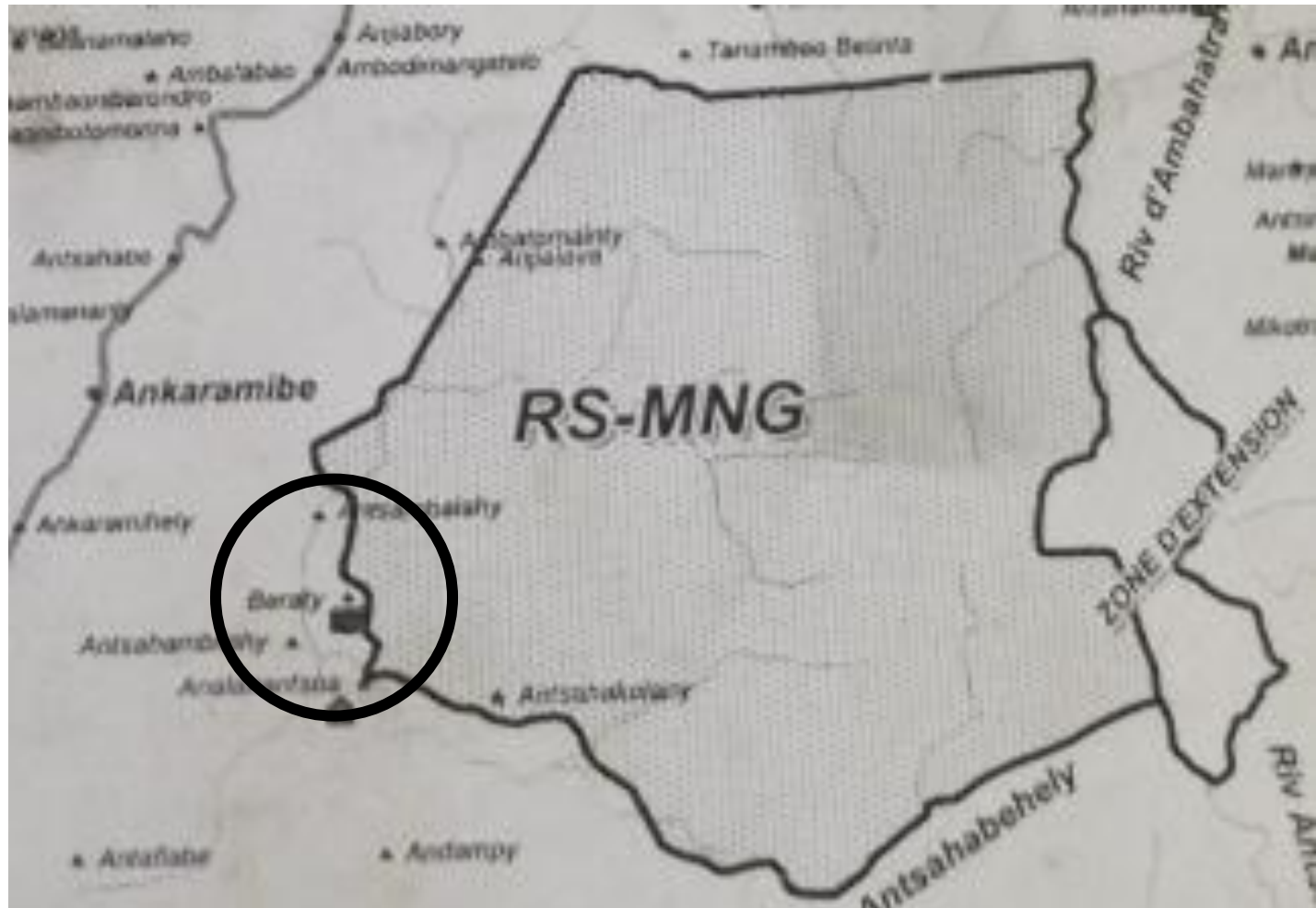
L.mittermeieri – Ampasindava Peninsula: results

Area	N° site	N° transect	Transect length (m)	Elevation (m)	N° observed animal
Ampasindava	1	1	380	~ 320	0
	1	1	380	~ 320	2
	1	1	380	~ 320	1
	2	1	890	190 - 525	6
	2	1	890	190 - 525	5
	2	1	890	190 - 525	4
	2	2	635	~ 500	3
	2	2	635	~ 500	0
	2	2	635	~ 500	4
	2	2	635	~ 500	4
	2	3	450	~ 300	1
	2	3	450	~ 300	3
	2	3	450	~ 300	3
	3	1	805	~80	4
	3	1	805	~80	1
	3	1	805	~80	1
	3	2	1260	~ 150	7
	3	2	1260	~ 150	6
	3	2	1260	~ 150	5
	4	1	1050	30 - 184	6
4	1	1050	30 - 184	3	
4	1	1050	30 - 184	2	
4	2	600	15 - 148	0	
4	2	600	15-148	4	

L.mittermeieri – Ampasindava Peninsula: results



L.dorsalis – Manongarivo Special Reserve: study sites



Area = 37622 ha
 => 1 site : 3 transects



L.dorsalis – Manongarivo Special Reserve: study sites



View of the Manongarivo Special Reserve

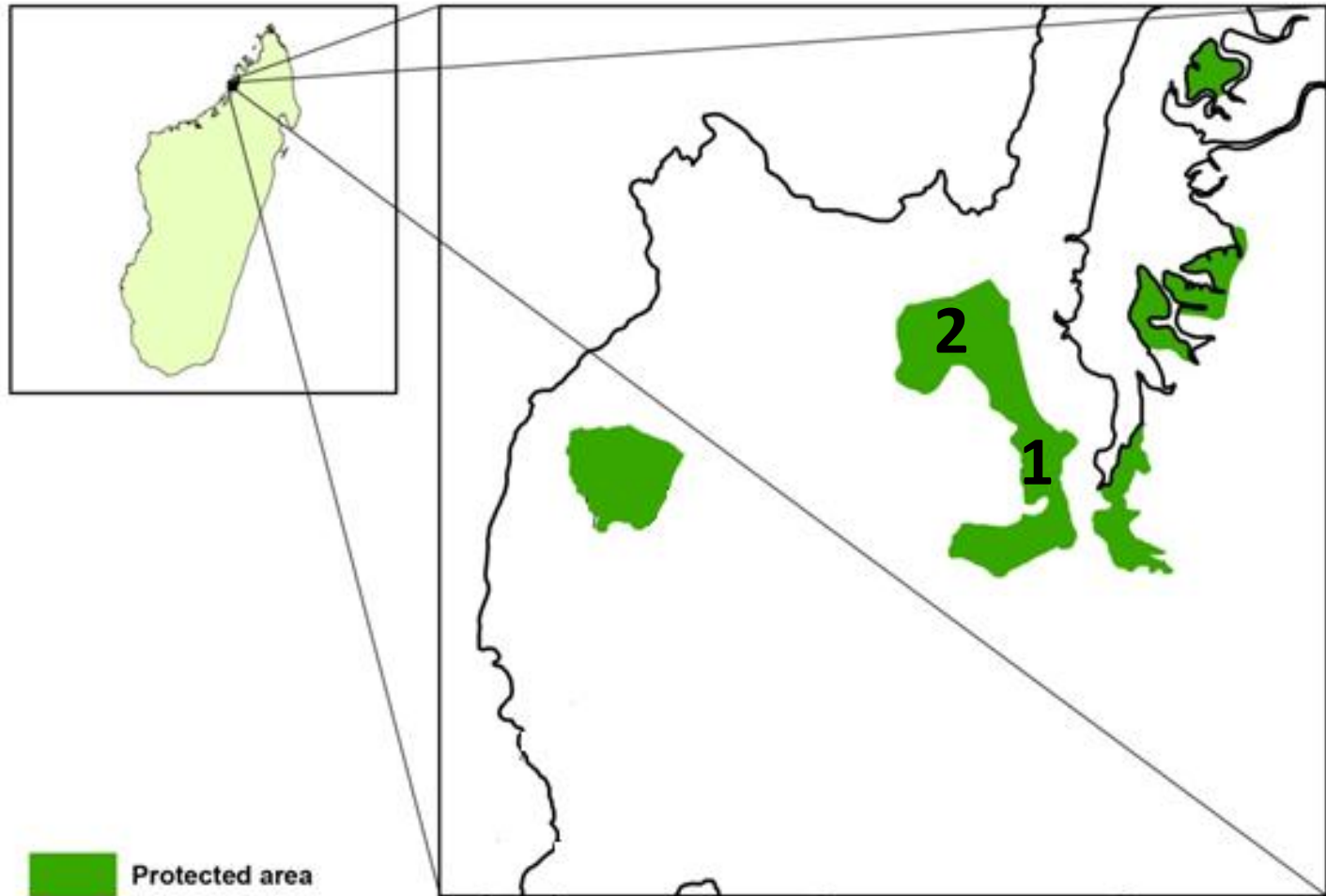


Site n°1 – 3 transects

L.dorsalis – Manongarivo Special Reserve: results

Area	N° site	N° transect	Transect length (m)	Elevation (m)	N° observed animal
Manongarivo Special Reserve	1	1	1400	520	9
	1	1	1400	520	6
	1	1	1400	520	6
	1	2	700	450	3
	1	2	700	450	7
	1	2	700	450	4
	1	3	700	730	2
	1	3	700	730	5
	1	3	700	730	4

L.sahamalazensis – Sahamalaza Peninsula: study sites



=> 2 site : 2 transects



L.sahamalazensis – Sahamalaza Peninsula: study sites



Site n°2 – 2 transects



L.sahamalazensis – Sahamalaza Peninsula: results

Area	N° site	N° transect	Transect length (m)	Elevation (m)	N° observed animal
Sahamalaza Peninsula	1	/	/	/	/
	2	1	1000	270	3
	2	1	1000	270	1
	2	1	1000	270	7
	2	2	900	150 - 300	6
	2	2	900	150 - 300	3
	2	2	900	150 - 300	6

Sleeping sites characteristics: results



Sleeping sites characteristics: results



Sleeping sites characteristics : results

							Tree species						
	N°	Species	Site	Date	Elevation (m)	Gps point	Local name	Family	Genus	DBH (cm)	Tree height (m)	Hight of the sleeping site (m)	Canopy Cover
Ampasindava	1	<i>L. m</i>	1	7/04/2014	303	S.13°46'02.3" E.48°05'40.2"	Piro	Hamamelidaceae	<i>Dicoryphe</i>	75,3	5,5	4	Open
	2	<i>L. m</i>	1	7/04/2014	346	S.13°46'40.8" E.48°05'40.8"	NA	NA	NA	163	19	9	Open
	3	<i>L. m</i>	1	8/04/2014	347	S.13°45'58.7" E.48°05'41.4"	Piro (dead)	Hamamelidaceae	<i>Dicoryphe</i>	214	14	6	Half open
	4	<i>L. m</i>	1	8/04/2014	347	S.13°45'58.7" E.48°05'41.4"	Piro (dead)	Hamamelidaceae	<i>Dicoryphe</i>	214	14	9	Half open
	5	<i>L. m</i>	1	8/04/2014	333	S.13°46'00.7" E.48°05'38.9"	Piro (dead)	Hamamelidaceae	<i>Dicoryphe</i>	94,2	3	3	Closed
	6	<i>L. m</i>	3	19/04/2014	83	S.13°44'35.0" E.48°53'37.9"	Nato	Sapotaceae	<i>Capurodendron</i>	119	12,5	10	Open
	7	<i>L. m</i>	4	29/04/2014	175	S.13°39'21.8" E.47°53'11.3"	Zahana	Sarcolaenaceae	<i>Leptolaena cuspidala</i>	113	12	5	Closed
S.R. Manongarivo	8	<i>L. d.</i>	1	12/05/2014	561	S.14°02'05.3" E.48°16'47.0"	Malemy sisiky	Erythroxylaceae	<i>Erythroxylum sphacranthium</i>	92	14	9	Closed
	9	<i>L. d.</i>	1	16/05/2014	689	S.14°02'09.4" E.48°16'59.3"	Tapiky	Myrtaceae	<i>Syzygium</i>	85	9	8	Closed
Sahamalaza	10	<i>L. s</i>	2	29/05/2014	281	S.14°18'44.3" E.47°54'36.0"	Manary/ Magnary	Fabaceae	<i>Dalbergia</i>	44	5	1,9	Closed
	11	<i>L. s</i>	2	29/05/2014	232	S.14°18'45.0" E.47°54'40.5"	Silvato	NA	NA	78,5	13	2	Closed
	12	<i>L. s</i>	2	29/05/2014	168	S.14°18'51.4" E.47°54'45.2"	Kitata	Euphorbiaceae	<i>Bridelia pervilleana</i>	81	14	8	Closed
	13	<i>L. s</i>	2	29/05/2014	183	S.14°18'50.9" E.47°54'42.8"	Kitata (dead)	Euphorbiaceae	<i>Bridelia pervilleana</i>	78	14	8	Closed

=> 13 sleeping sites

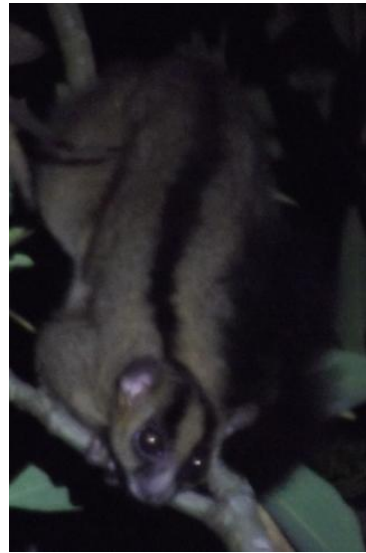
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	11	<i>L.s</i>	2	29/05/2014	232	S.14°18'45.0" E.47°54'40.5"	Silvato	NA	NA	78,5	13	2	Closed
	12	<i>L.s</i>	2	29/05/2014	168	S.14°18'51.4" E.47°54'45.2"	Kitata	Euphorbiaceae	<i>Bridelia pervilleana</i>	81	14	8	Closed
	13	<i>L.s</i>	2	29/05/2014	183	S.14°18'50.9" E.47°54'42.8"	Kitata (dead)	Euphorbiaceae	<i>Bridelia pervilleana</i>	78	14	8	Closed

=> 13 sleeping sites

Extra data



H. occidentalis



Phaner parienti



M. sambiranensis



Avahi unicolor



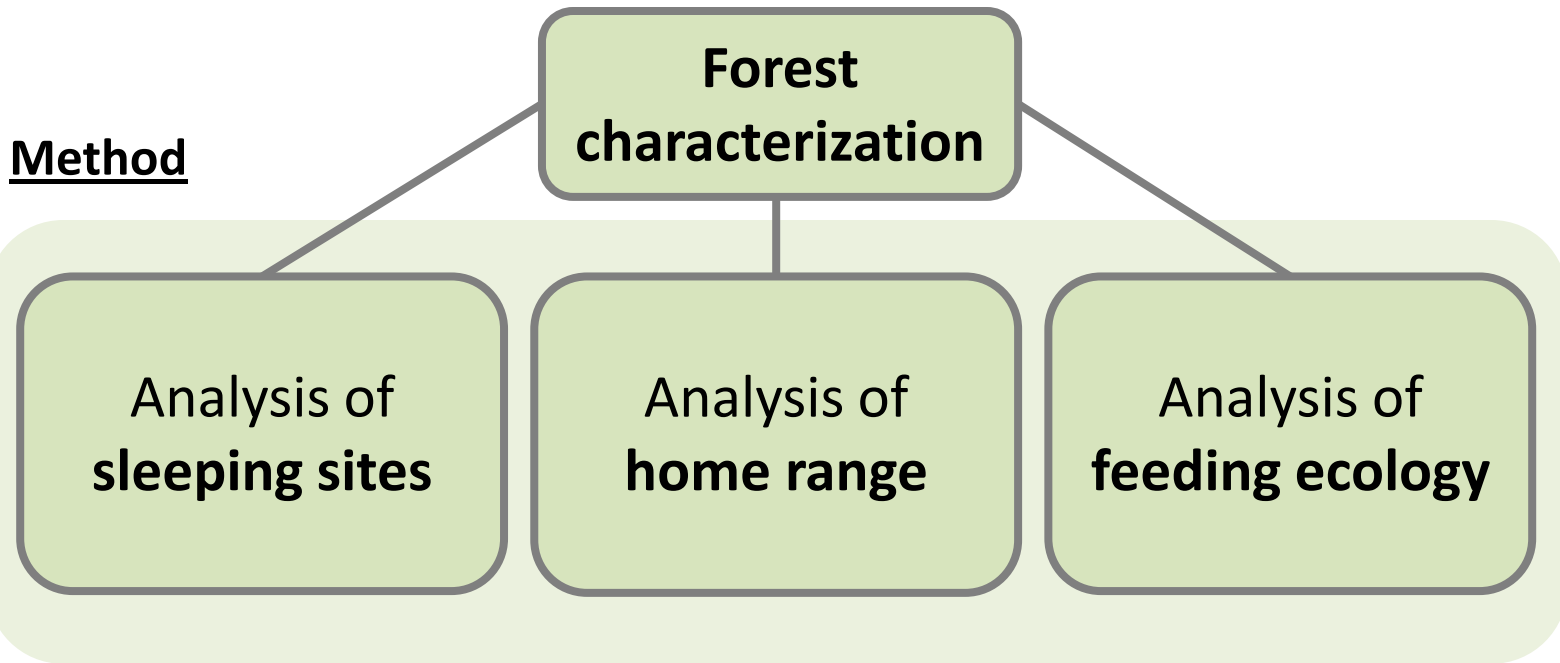
Eulemur macaco



Cheirogaleus major

E. flavifrons – *Mirza zaza*

Identify and compare habitat use of three studied species



Evaluate impact of forest degradation and habitat fragmentation on Ampasindava Peninsula – *Lepilemur mittermeieri*

Method

Forest characterization

Actual spatial structure configuration

Evolution of the spatial structure configuration over the years

Tools

- ✓ Size
 - ✓ Shape
 - ✓ Isolation
- (GPS points + GIS)

- ✓ Size
 - ✓ Shape
 - ✓ Isolation
- (GPS points + GIS)



Acknowledgment



Fonds Léopold III
pour l'Exploration et la Conservation de la Nature asbl



THANK YOU FOR YOUR ATTENTION

