

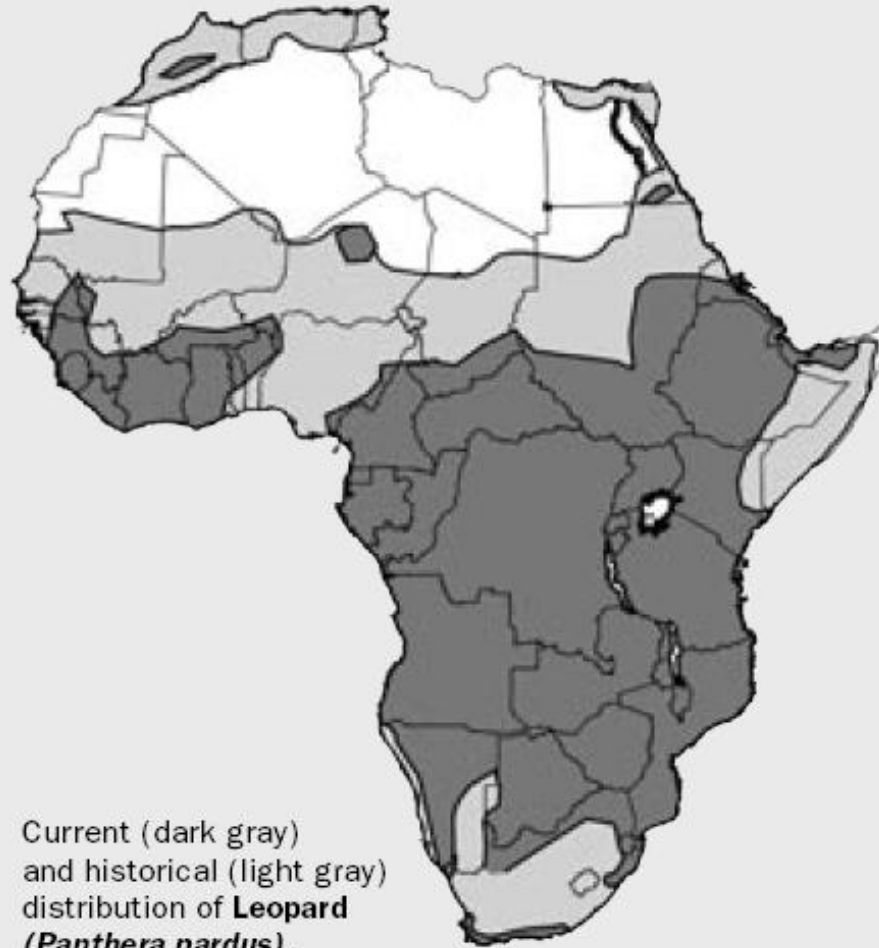
The status of the leopard in Gabon and lessons learned for leopard research and management in W/C Africa



Philipp Henschel, PhD, PANTHERA
Lion Conservation Program, Survey Coordinator



Justification of the Gabon study ó Range



From: Ray, J., L. Hunter, & J. Zigouris 2005. Setting Conservation and Research Priorities for Larger African Carnivores. WCS Working Paper No. 24, Wildlife Conservation Society, New York.



Justification of the Gabon study - Numbers



{20723}-{20753} {20773}-{20833}

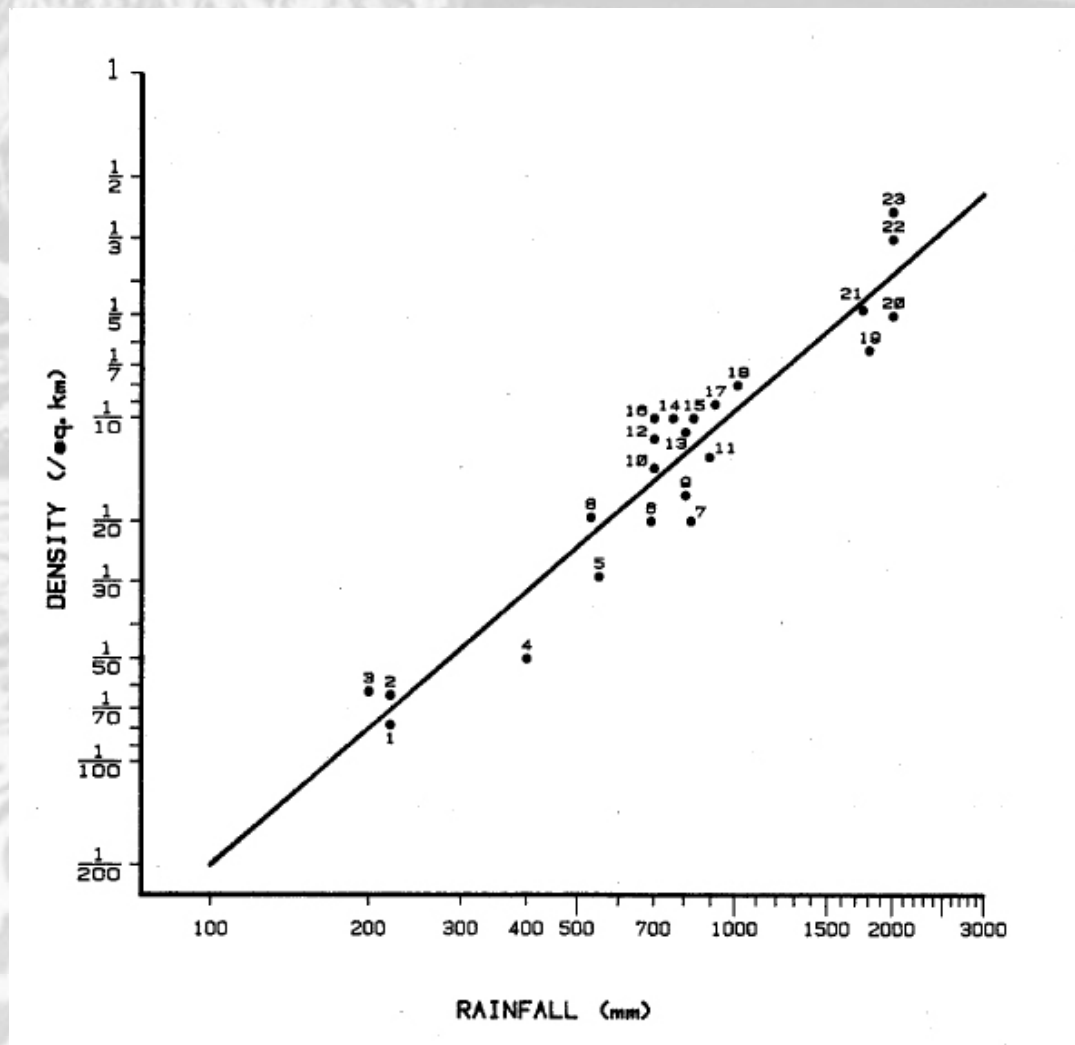
Survey of the Status of the Leopard (*Panthera pardus*) In Sub-Saharan Africa



R.B. Martin and T. de Meulenaer



Justification of the Gabon study - Numbers



From: Martin, R.B. & de Meulenaer, T. 1988. Survey of the status of the leopard (*Panthera pardus*) in sub-Saharan Africa. CITES Secretariat, Lausanne.



Justification of the Gabon study - Numbers

Estimates by Martin & de Meulenaer 1988:

É Sub-Saharan Africa: 714.000 leopards (range: 598.000 ó 854.000)

É Rain forests of the Congo Basin: 286.735 ind. (>40 % of Africa's leopards)

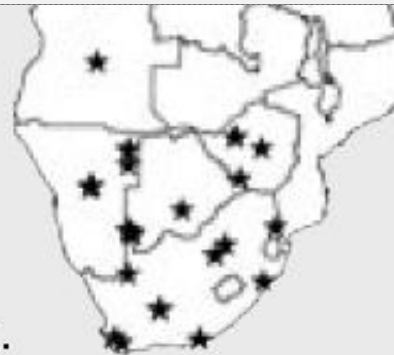
ó Translating to population densities of up to 40 leopards / 100 km² (equals 1 ind. / 2.5 km²) in rain forest areas



Justification of the Gabon study ó Extent of knowledge



- " >100 studies conducted on leopards in Africa
- " 6 took place in the W/C Africa
- " 1 actually looked at leopard numbers



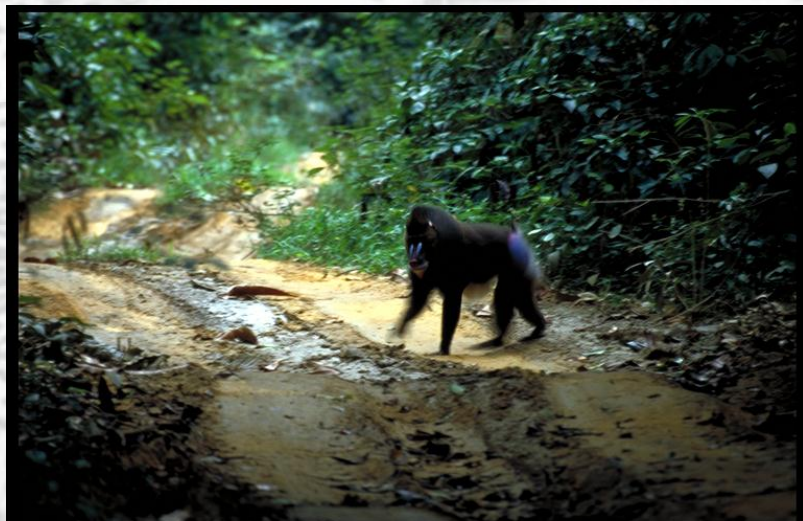
Field locations
for **Leopard** studies.



From: Ray, J., L. Hunter, & J. Zigouris 2005. Setting Conservation and Research Priorities for Larger African Carnivores. WCS Working Paper No. 24, Wildlife Conservation Society, New York.



Justification of the Gabon study ó the bushmeat crisis



Justification of the Gabon study ó the bushmeat crisis



In the Congo Basin, 1.2 million tons of wild meat are extracted annually*

*** From: Wilkie, D.S. & Carpenter, J.F. (1999). Bushmeat hunting in the Congo Basin: an assessment of impacts and options for mitigation. Biodiv. Conserv. 8: 927-955.**



Justification of the Gabon study ó direct persecution



Justification of the Gabon study ó direct persecution



Gabon study ó goal

í is to quantify the impact of anthropogenic disturbances on leopard population densities in the African rain forest.



Gabon study objectives

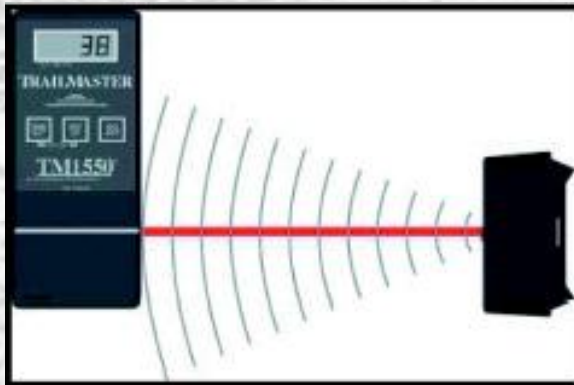
- É Assess leopard population density and prey preference in several protected rain forest sites
- É Assess leopard population density and prey preference in several rain forest sites where hunting for bushmeat occurs at varying intensity
- É Compare leopard population densities and prey composition between the protected and the hunted study areas, to describe and quantify the impact of hunting on leopards



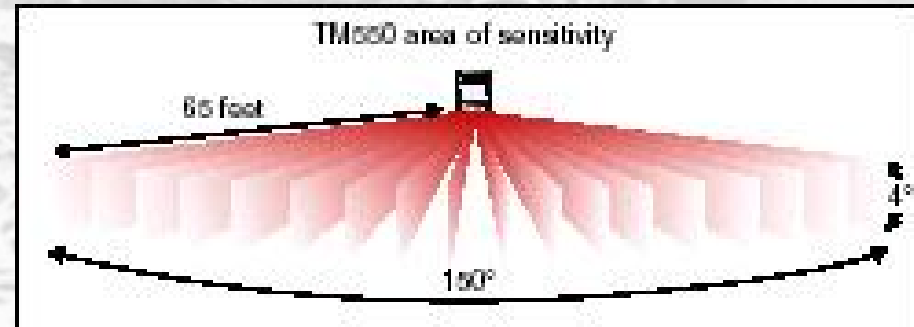
Gabon study ó how to count leopards in the rainforest?

Use camera traps!

Infrared beam



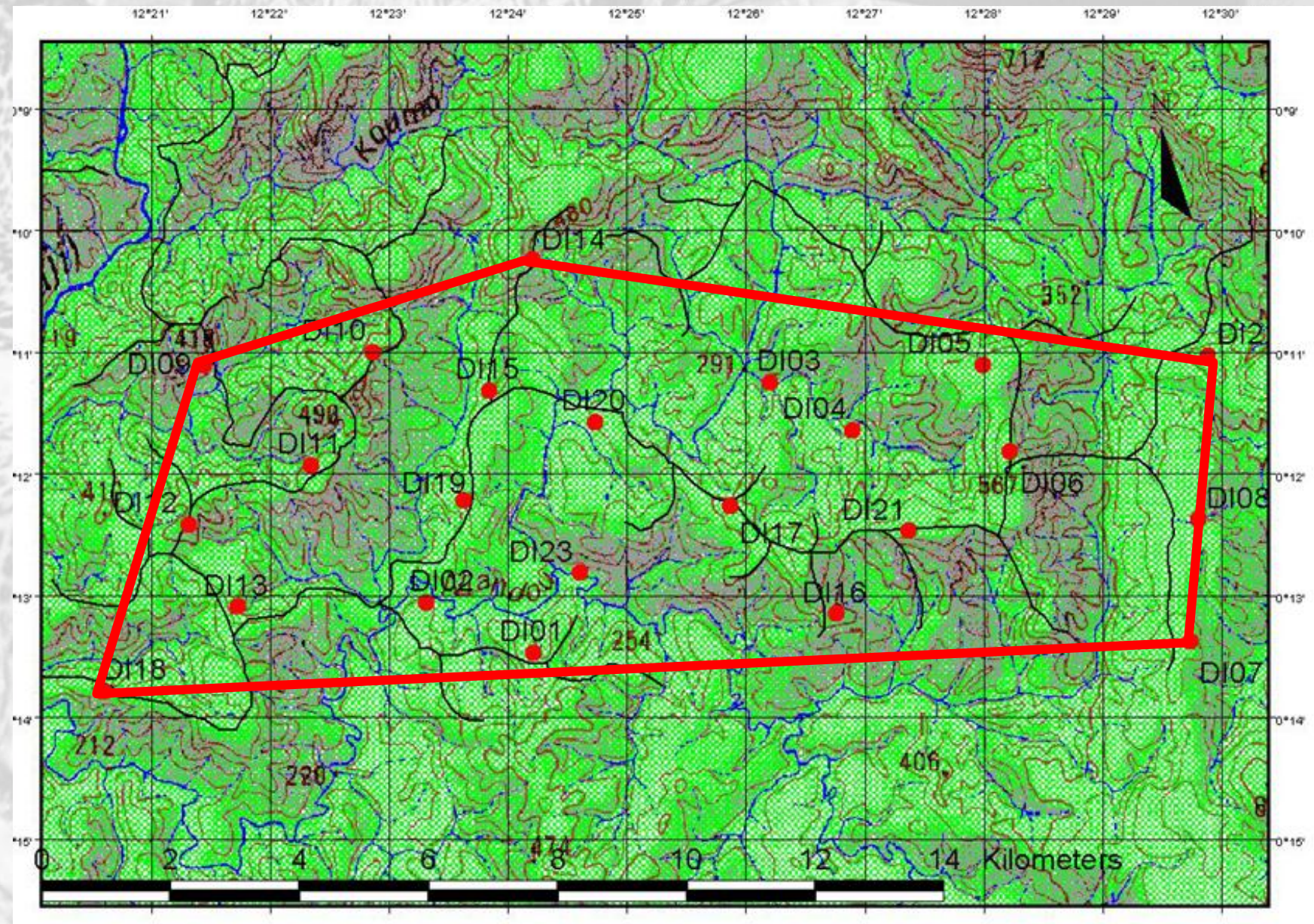
Motion detector



Camera



Gabon study ó how to count leopards in the rainforest?

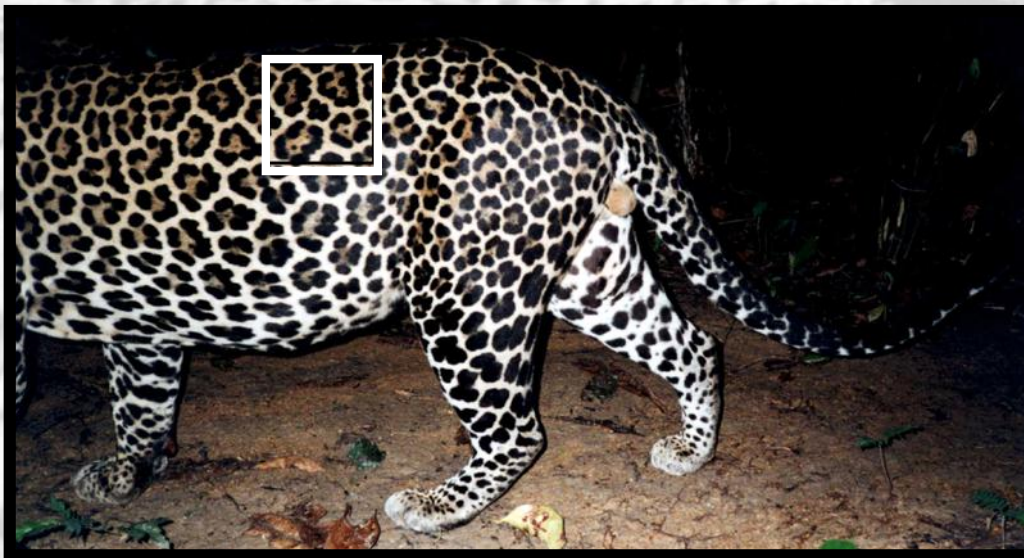
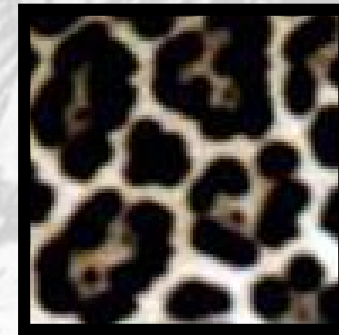


Gabon study ó how to count leopards in the rainforest?



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Gabon study ó how to count leopards in the rainforest?

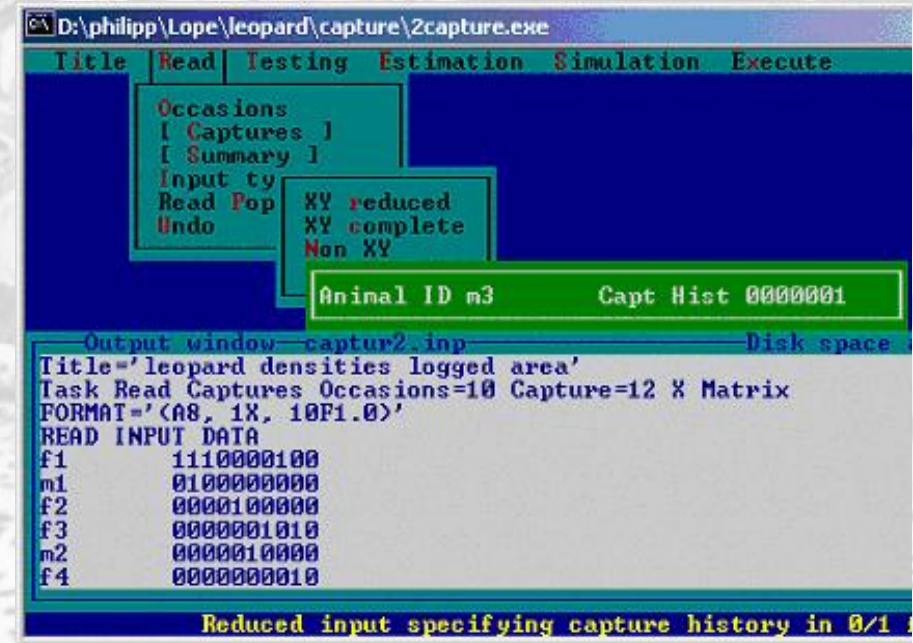


Gabon study ó how to count leopards in the rainforest?



Gabon study ó how to count leopards in the rainforest?

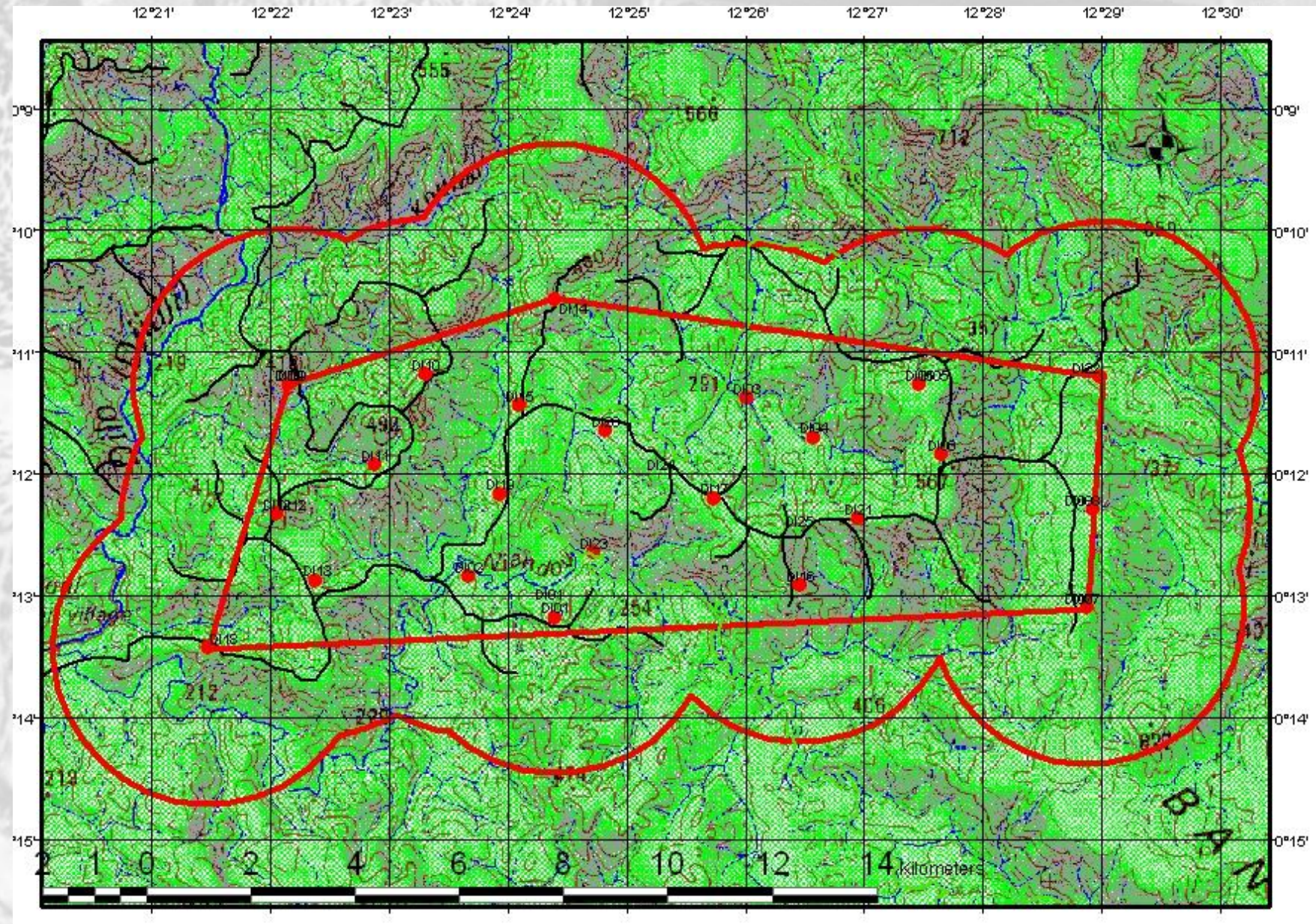
ID	P1	P2	P3	P4
maleA	1	1	0	0
maleB	0	1	0	0
femaleA	0	0	1	1
femaleB	0	1	0	0
femaleC	1	0	0	1
femaleD	0	0	0	1



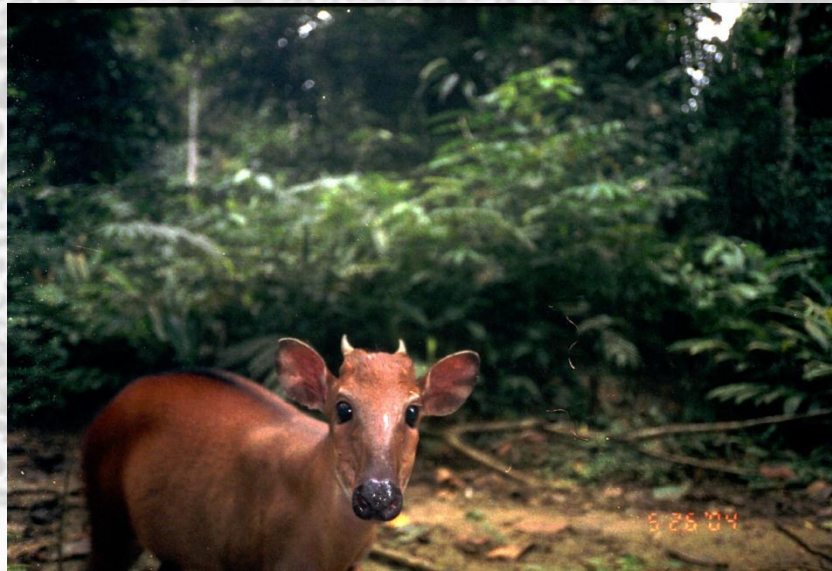
= N (population size in study area)

D (population density) = N / A (surface of the study area)

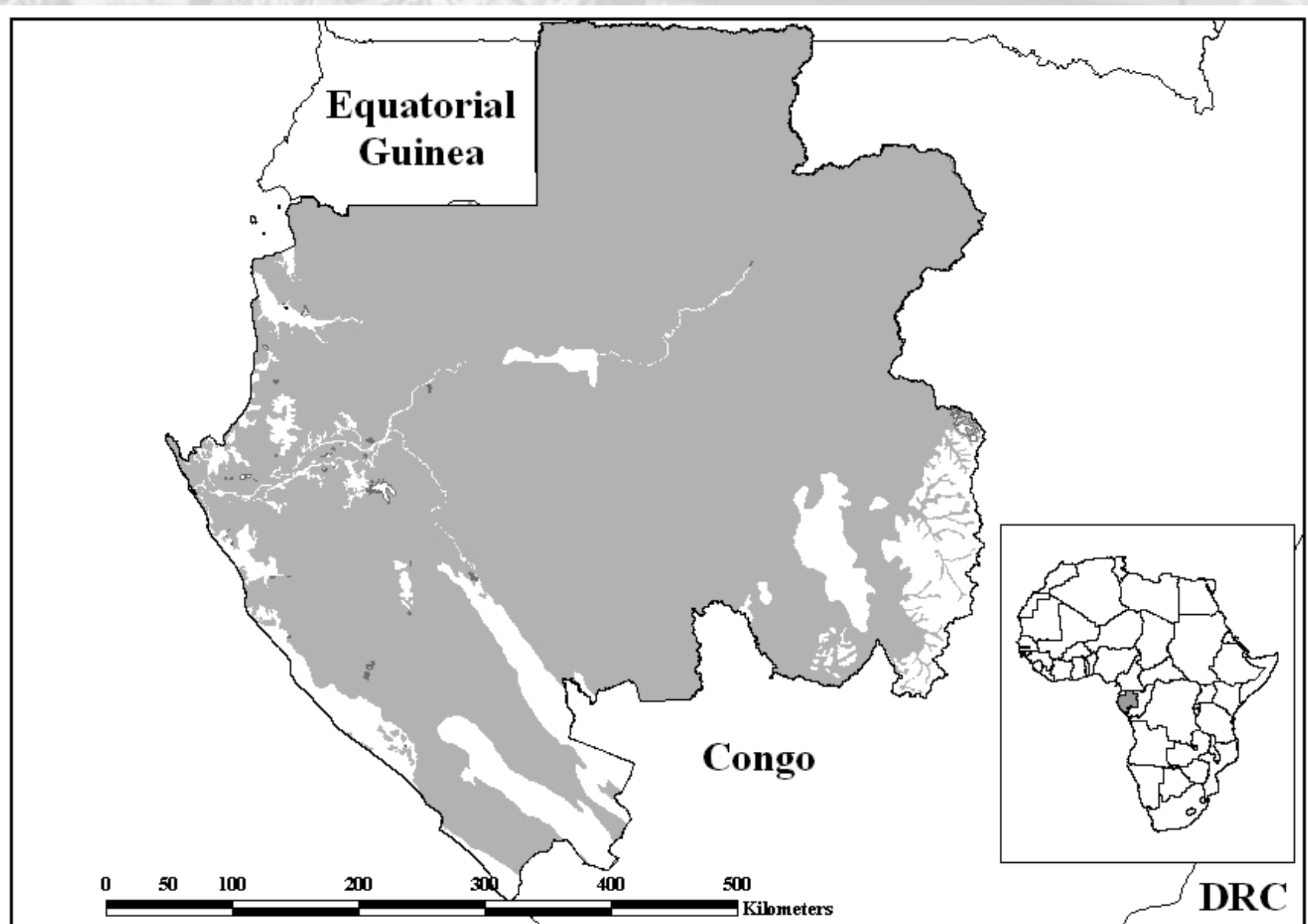
Gabon study ó how to count leopards in the rainforest?



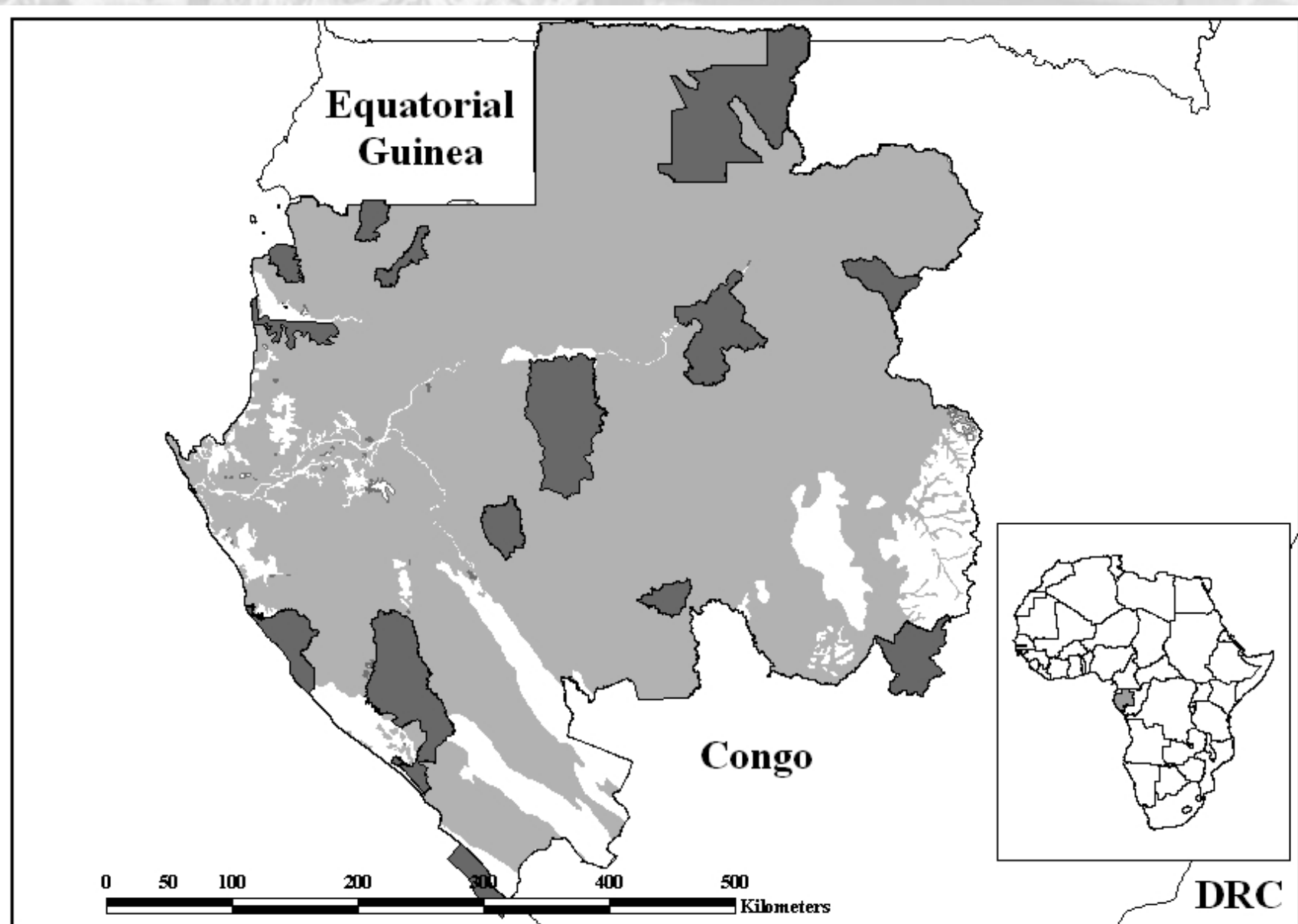
Gabon study ó estimating prey abundance



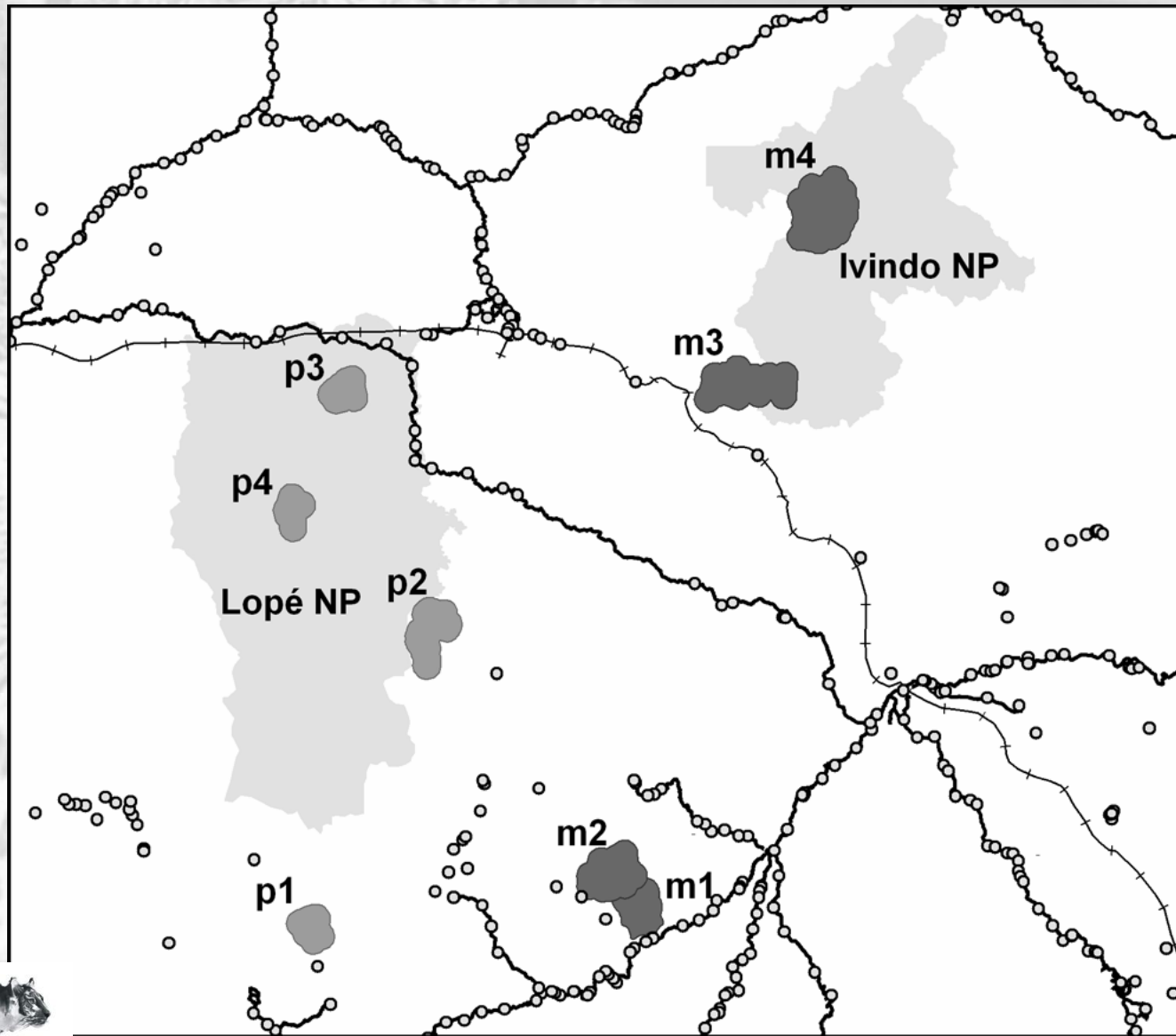
Gabon study ó study sites



Gabon study ó study sites



Gabon study ó study sites

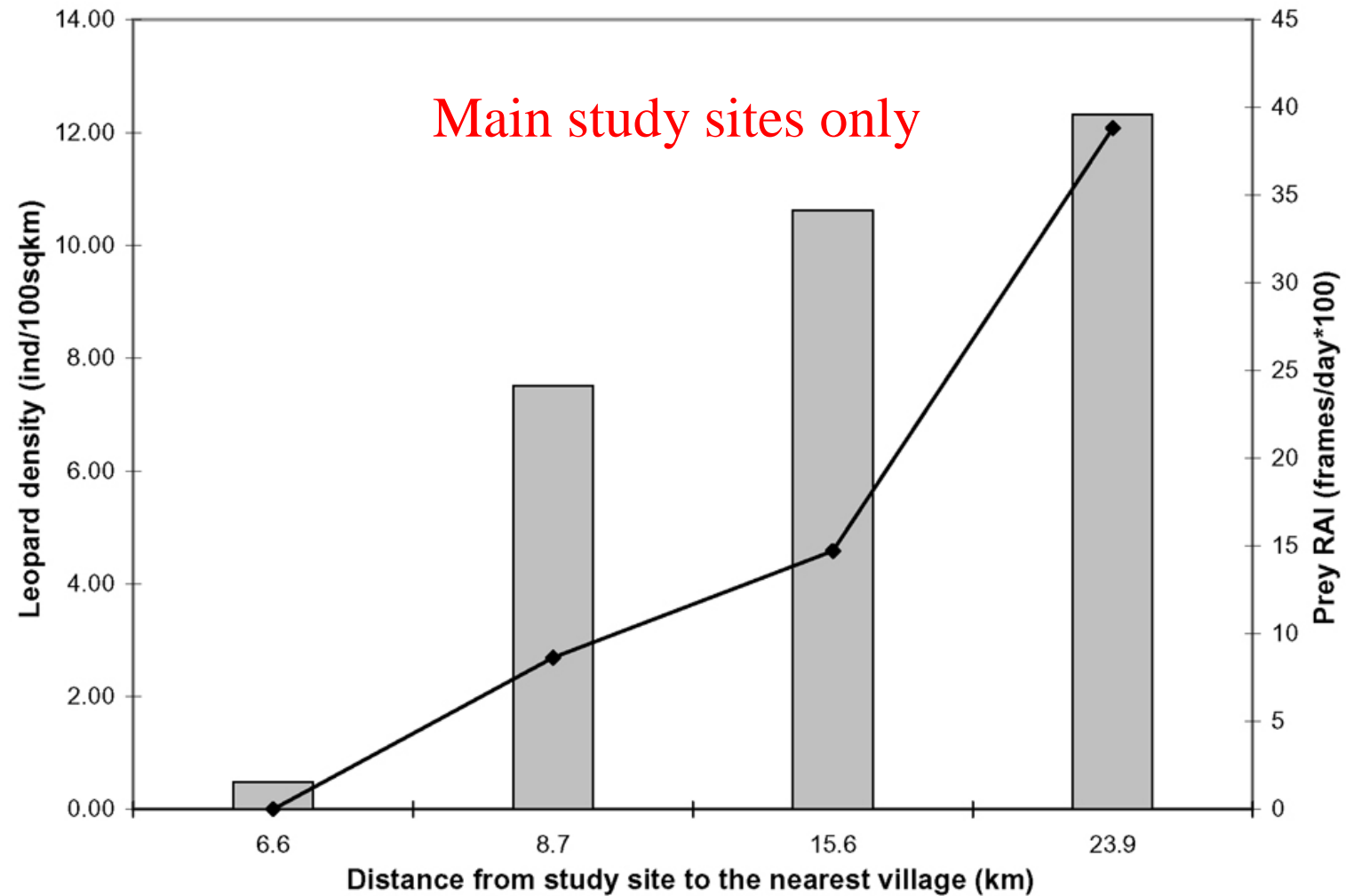


Gabon study ó results

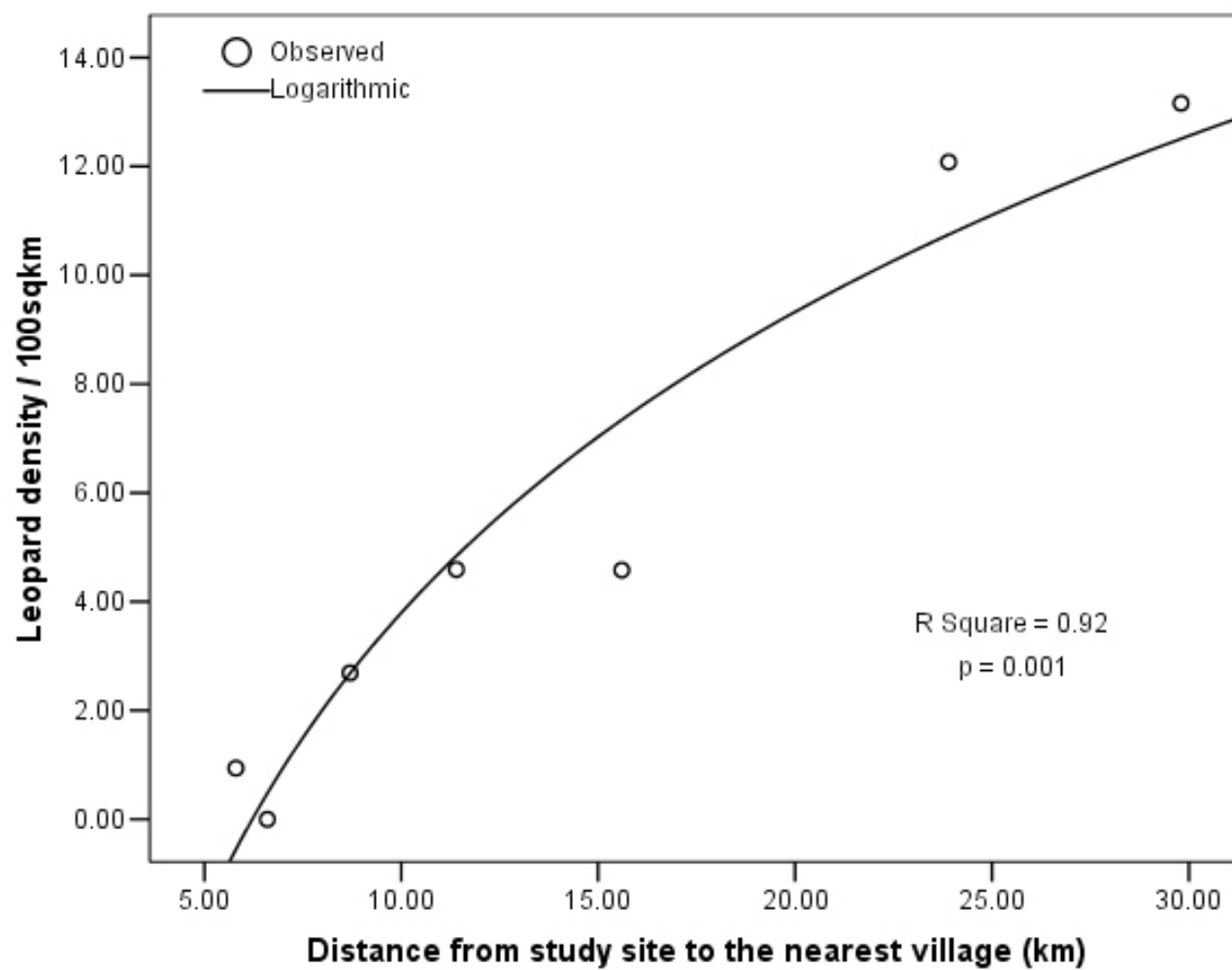
Study site	Abundance +- SE	95% confidence interval	Buffer 1/2 MMDM (km) ± SE	Sample area (km²)	Density (per 100 km²) ± SE
m1	-	-	-	-	-
m2	5 ± 1.51	5 - 12	3.59 ± 0.49	186	2.69 ± 0.94
m3	10 ± 2.17	9 - 19	2.99 ± 0.97	218	4.58 ± 2.58
m4	28 ± 8.26	20 - 55	2.90 ± 0.65	232	12.08 ± 5.11
p1	1 ± 0.41b	1 - 1	3.59 ± 0.49 ^c	106	0.94 ± 0.44
p2	2 ± 0.18	2 - 2	3.59 ± 0.49 ^c	175	1.15 ± 0.23
p3	4 ± 1.36	4 - 10	2.99 ± 0.97 ^d	87	4.59 ± 4.08
p4	11 ± 5.10	6 - 29	2.99 ± 0.97 ^d	84	13.16 ± 12.62



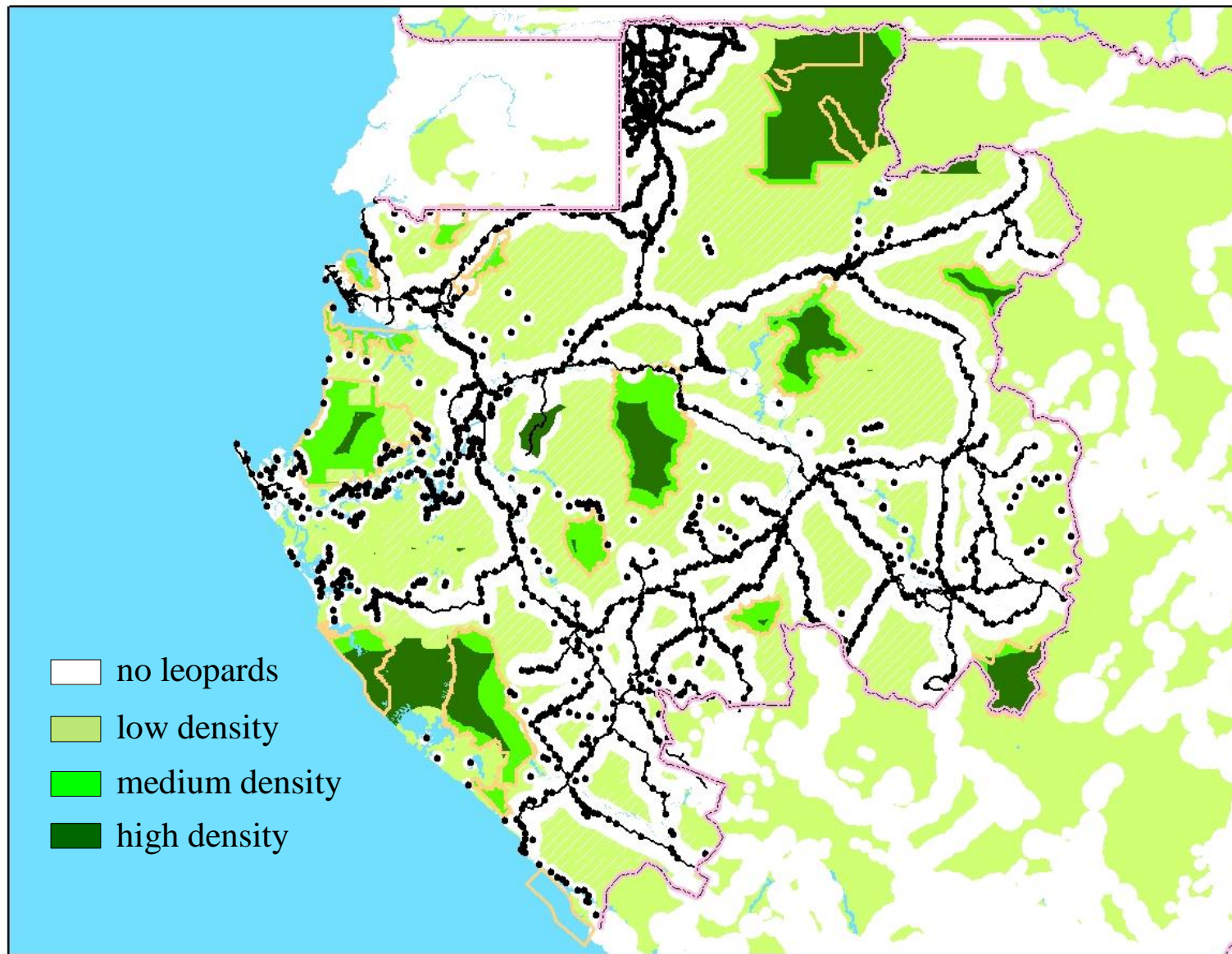
Gabon study ó results



Gabon study ó results



Gabon study ó GIS model for leopard distribution



Gabon study ó extrapolation of leopard numbers

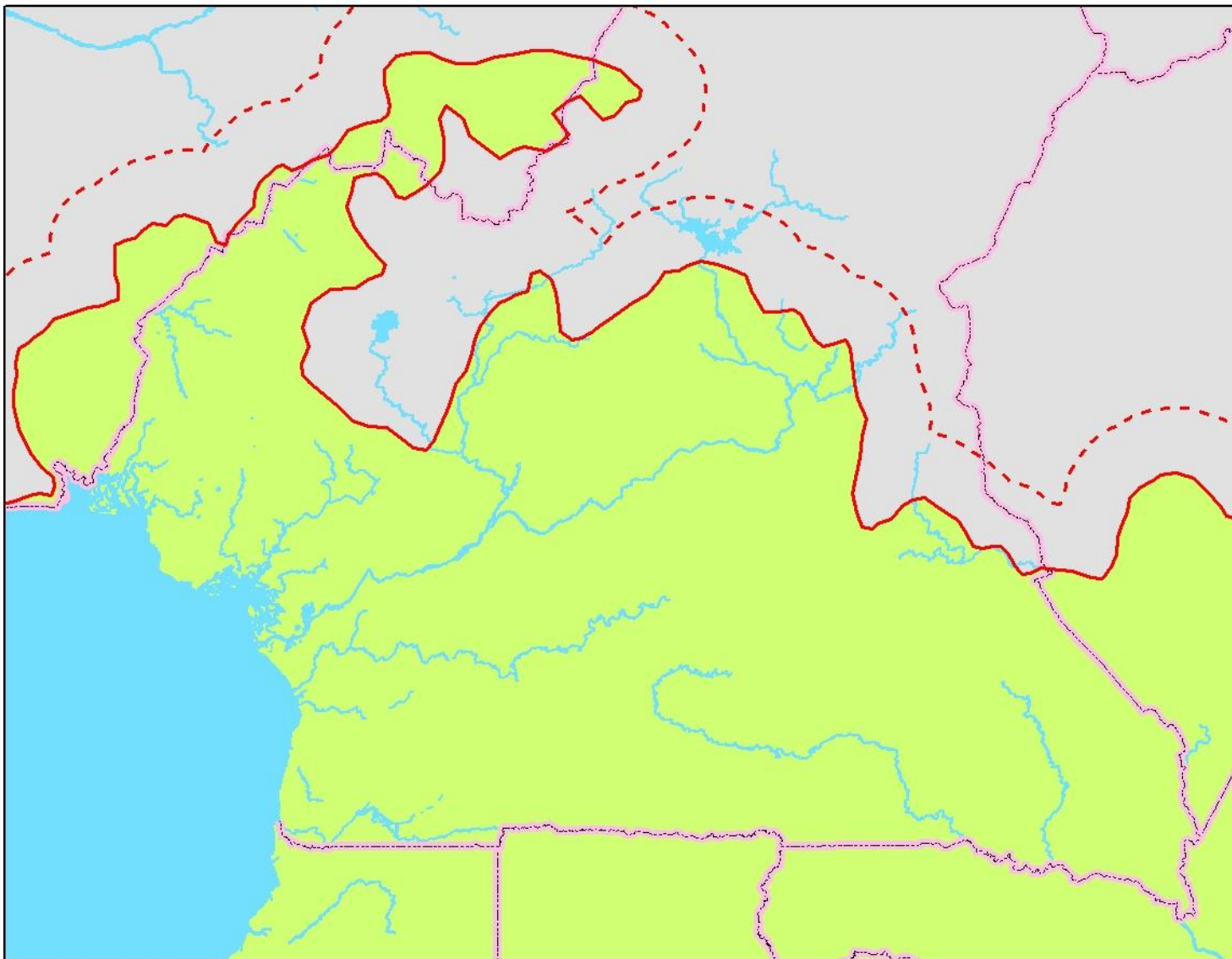
Land use	Land area (km ²)	Land area (%)	Leopard density	SE	Population size	Min	Max	Populations %
Plantation/commercial hunting	106013	40.4	0.0	-	-	-	-	-
Logging concessions	86281	32.9	2.7	0.94	2320	1508	3133	39.3
No official land use (mostly gaps between concessions)	40360	15.4	2.7	0.94	1085	705	1465	18.4
National parks and reserves	15503	5.9	5.1	3.38	797	273	1320	13.5
Pristine parts of national parks without disturbance	14133	5.4	12.1	5.11	1708	986	2430	28.9
totals	262290	100.0			5910	3471	8348	100.0

Population inside national parks: 2358 leopards (>40%)

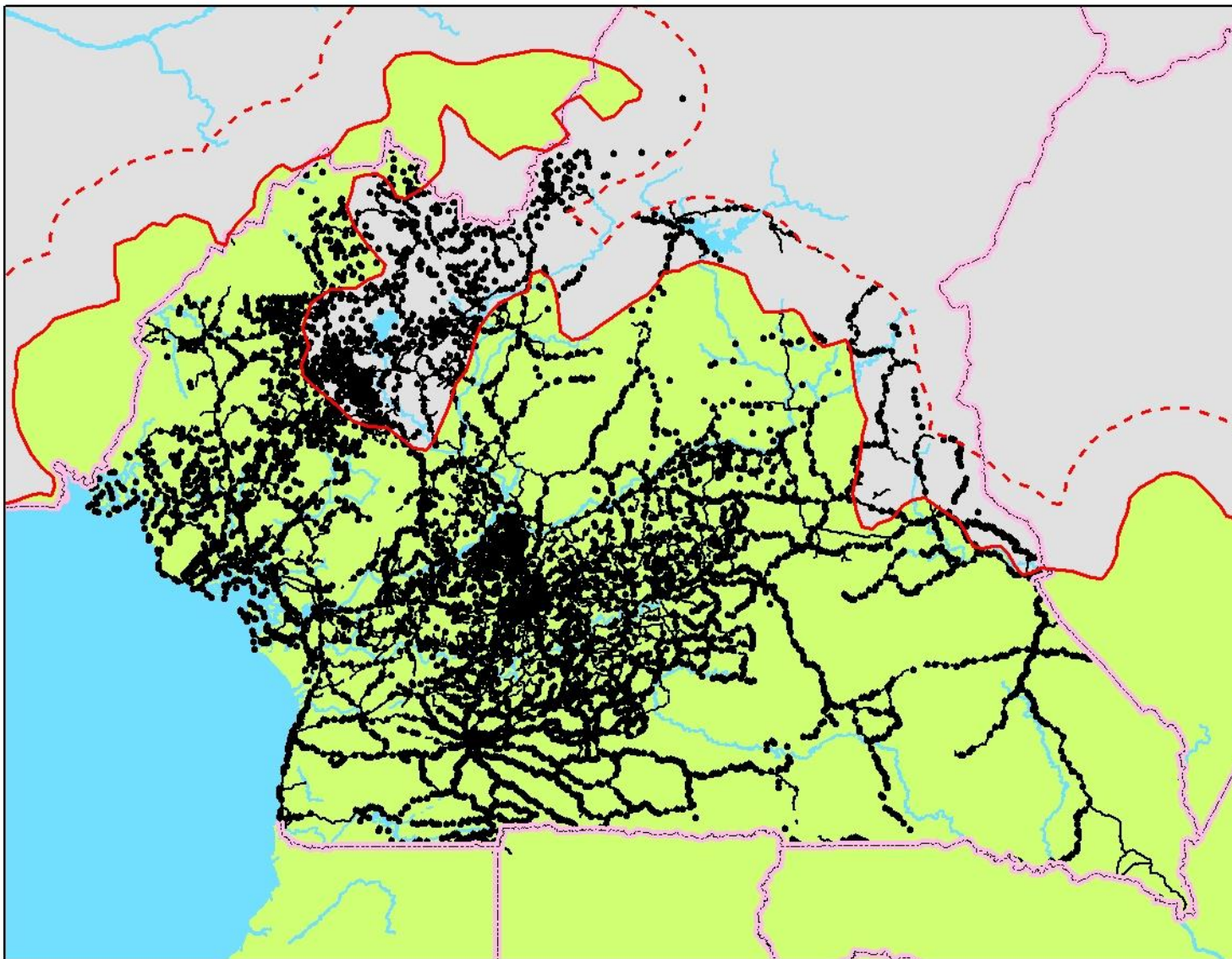
Estimate for Gabon by Martin & de Meulenaer (1988): 38.463 leopards



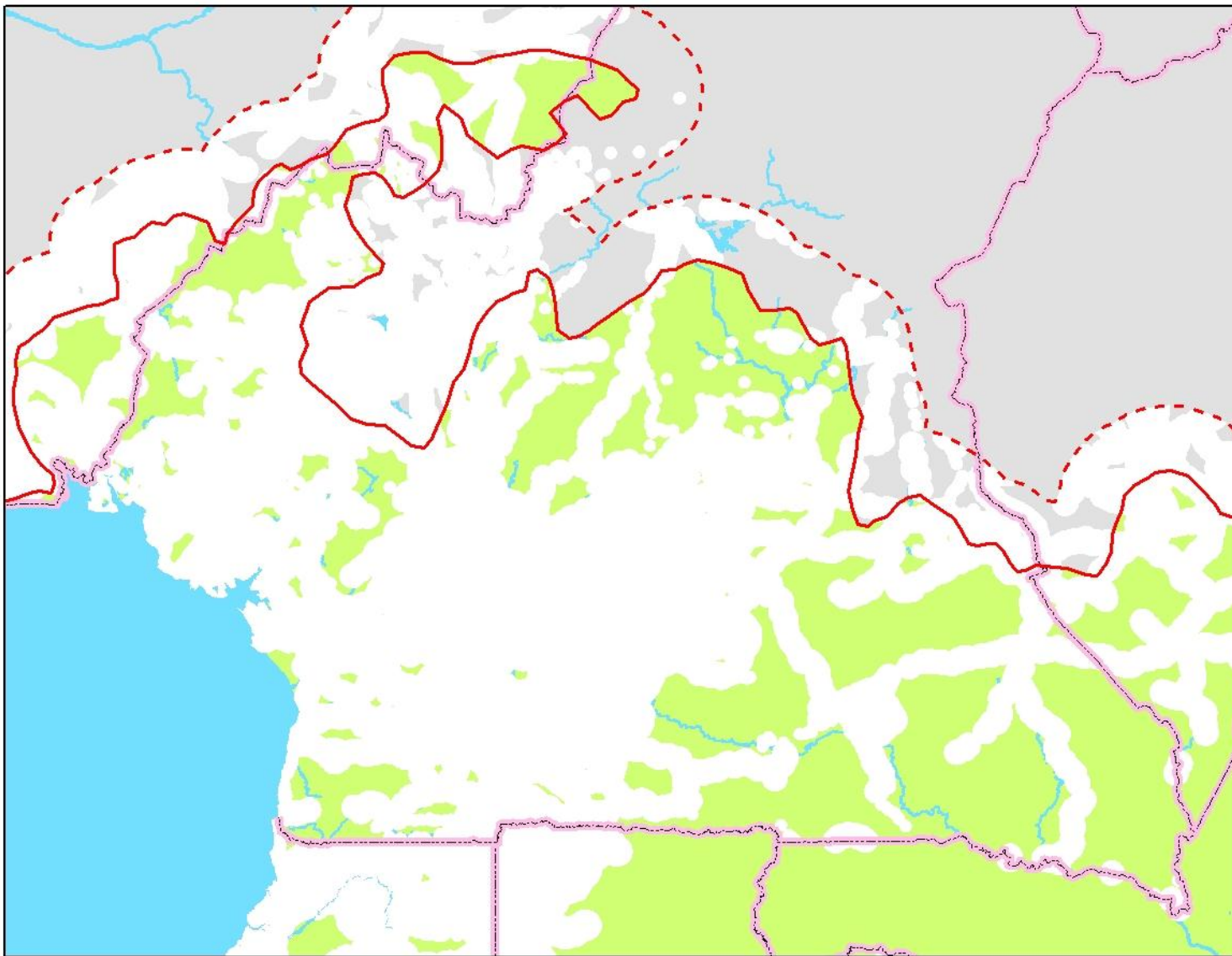
A careful look at southern Cameroon



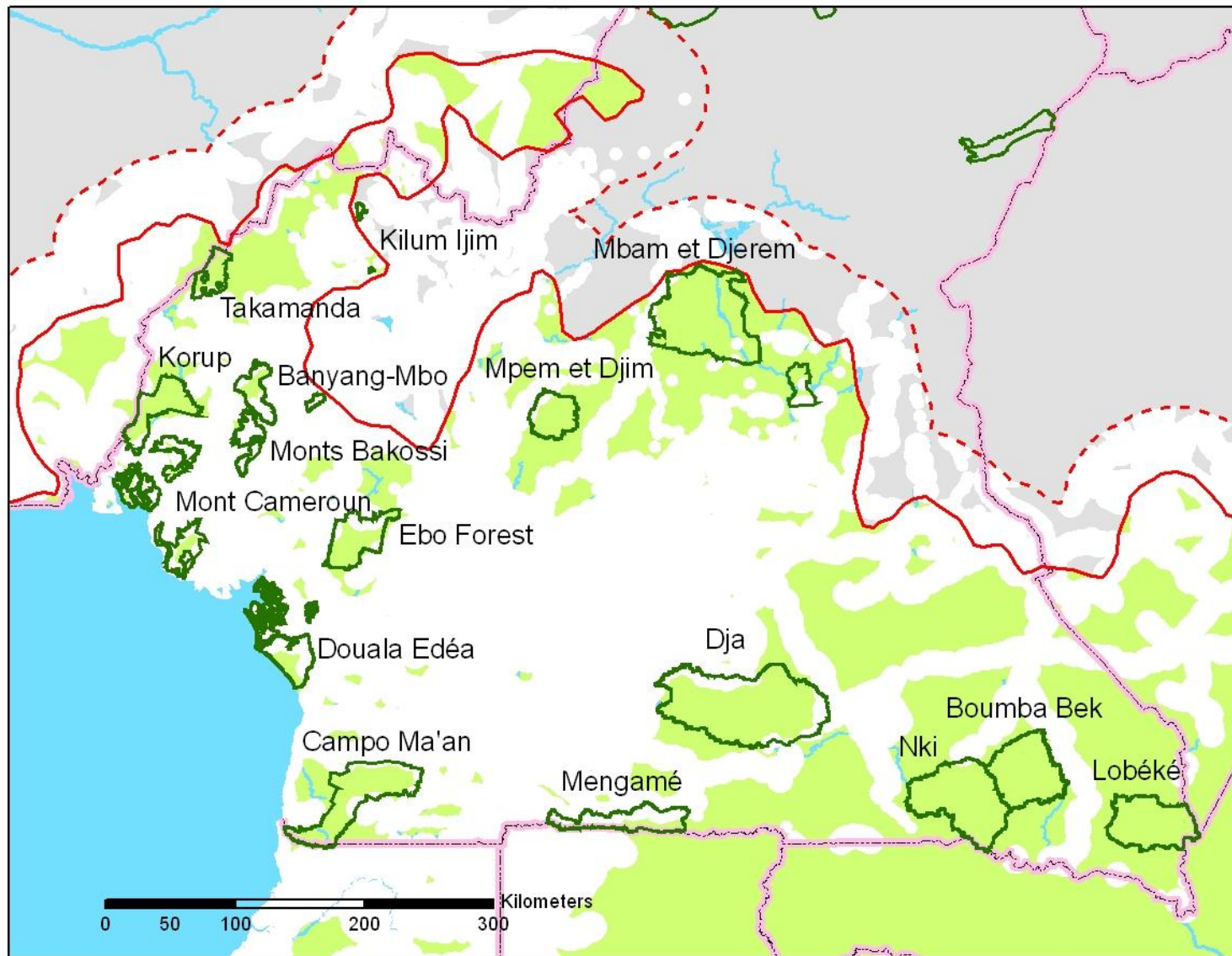
A careful look at southern Cameroon



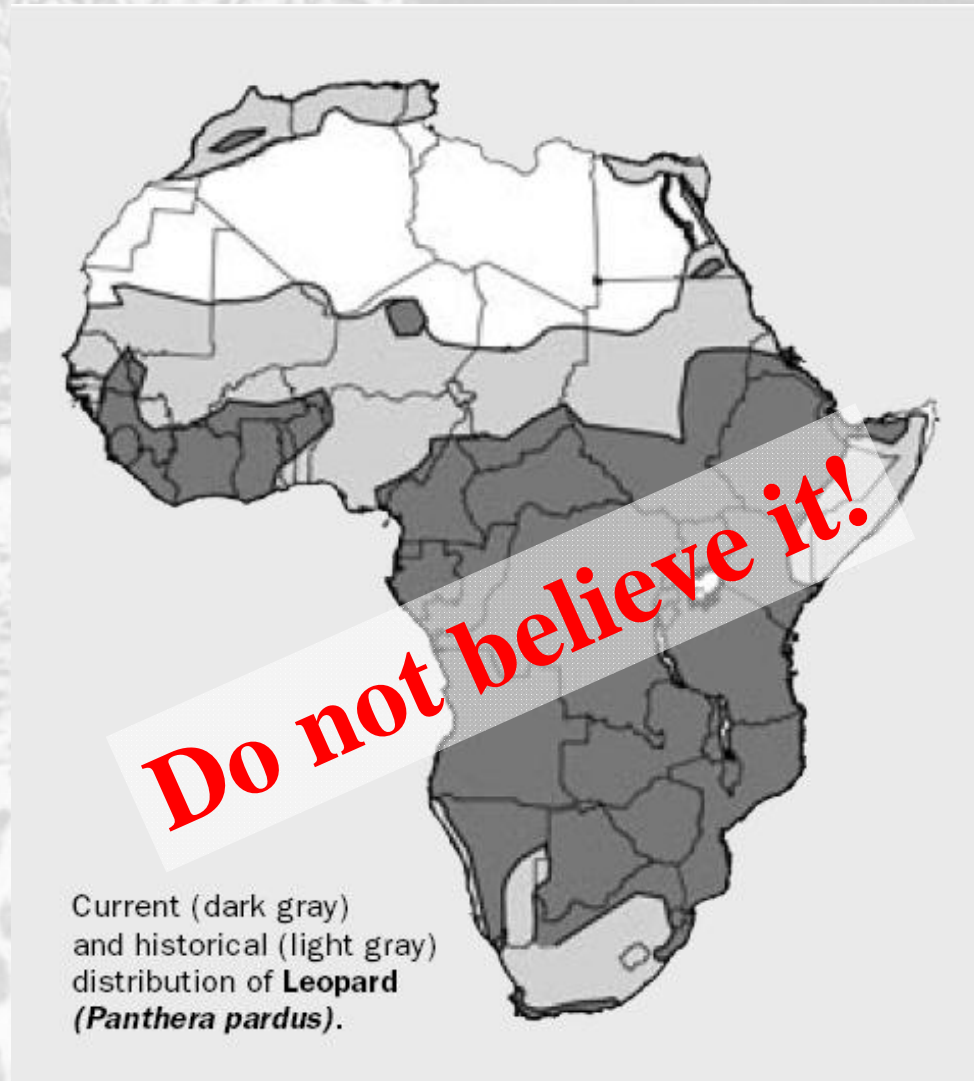
A careful look at southern Cameroon



A careful look at southern Cameroon



Gabon study ó lessons learned?



**Martin & de Meulenaer (1988): 714.000
leopards in sub-Saharan Africa**

Thank You!

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