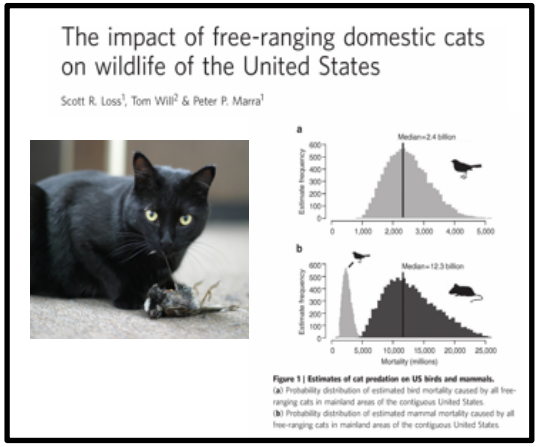
Interactions and disease transmission between domestic cats and carnivores in Madagascar

1. How does dogs and cat occupancy probability and colonization rate affect Eupleridae occupancy probability
2. What are the variables associated Toxoplasma gondii exposure in Eupleridae


The impact of free-ranging domestic cats on wildlife of the United States

Scott R. Loss[1], Tom Will[2] & Peter P. Marra[1]

Figure 1 | Estimates of cat predation on US birds and mammals. (**a**) Probability distribution of estimated bird mortality caused by all free-ranging cats in mainland areas of the contiguous United States. (**b**) Probability distribution of estimated mammal mortality caused by all free-ranging cats in mainland areas of the contiguous United States.

Encephalomyelitis by *Toxoplasma gondii* in a captive fossa (*Cryptoprocta ferox*)

J.M. Corpa[a,*], A. García-Quirós[a], M. Casares[b], A.C. Gerique[b], M.D. Carbonell[b], M.T. Gómez-Muñoz[c], F.A. Uzal[d], J. Ortega[a]

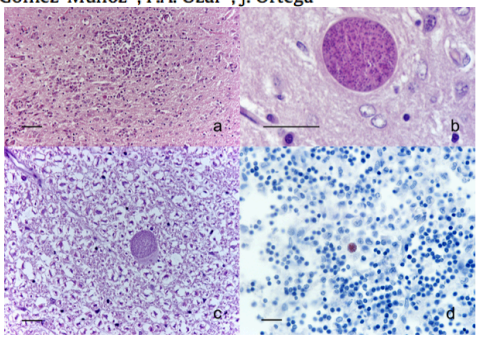


Fig. 1. (a) Brain. Focus of inflammation composed by gliosis, vacuolated macrophages (Gitter cells), lymphocytes and plasma cells. Hematoxylin and eosin. Bar = 80 μm. (b) Brain. A *T. gondii* like tissue cyst. Hematoxylin and eosin. Bar = 20 μm. (c) Spinal cord. A *T. gondii* like tissue cyst in the white matter. Hematoxylin and eosin. Bar = 20 μm. (d) Brain. Protozoan cyst positive to anti-*Toxoplasma gondii* polyclonal antibody. Avidin–biotin peroxidase complex (ABC). Bar = 20 μm.

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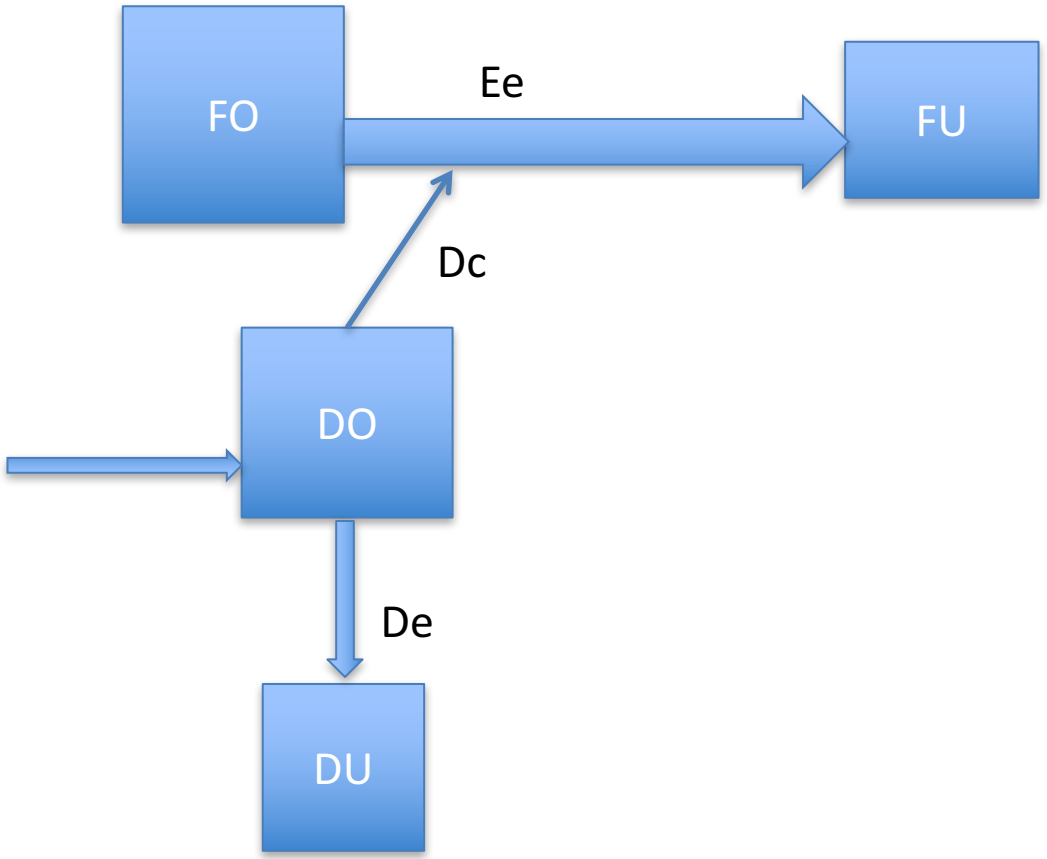
Mechanistic model: How does the occupancy of dogs & cats affect the occupancy of Eupleridae in forest patches.

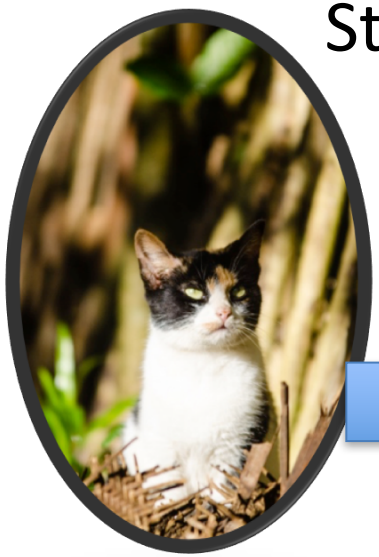
States:
Eu: Eupleridae Unoccupied
Eo: Eupleridae Occupied

Do: Dog occupied
Du: Dog unoccupied

Processes:
Dog colonization
Dog extinction
Eupleridae extinction



Statistical model: what are risk factors of exposure to Toxoplasma gondii in Eupleridae



- Response variable: pres/absence of antibodies to Toxoplasma
- Predictor variables: Species, Age, Sex, distance of capture to closest village, edge of forest
- Family: “Binomial”
- Link: logit
- Hypothesis: Exposure to toxoplasma gondii in Eupleridae is associated with demographic and spatial factors in Eupleridae of Madagascar

Variable	*P*-value	Odds ratio	95% CI
Sex	0.03		
Female		1.00	
Male		4.13	1.16–14.78
Species	0.003		
G. fasciata		1.00	
Cr. ferox		24.55	2.19–275.47
G. elegans		5.07	1.31–19.58

toxofull<-glm(Toxo ~Species+Sex+distance_vill+distance_edge, family = binomial, data = euplerid)

Patterns of Exposure of Carnivores to Selected Pathogens in the Betampona Natural Reserve Landscape, Madagascar

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Next Steps

1. Collect samples from additional sites in multiple regions of Madagascar.
2. Identify other pathogens that may affect the populations of Eupleridae in protected areas.