



# The Relationships Between Human Health and Environmental Conservation

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# Outline

- The nexus of environmental change and human health
- Wildlife consumption and human nutrition
- Broad connections of environmental resources and human health
- Future directions: research and interventions



# Global Malnutrition



# Biodiversity Loss



# Population Depletion



# Disentangling environmental change and human health



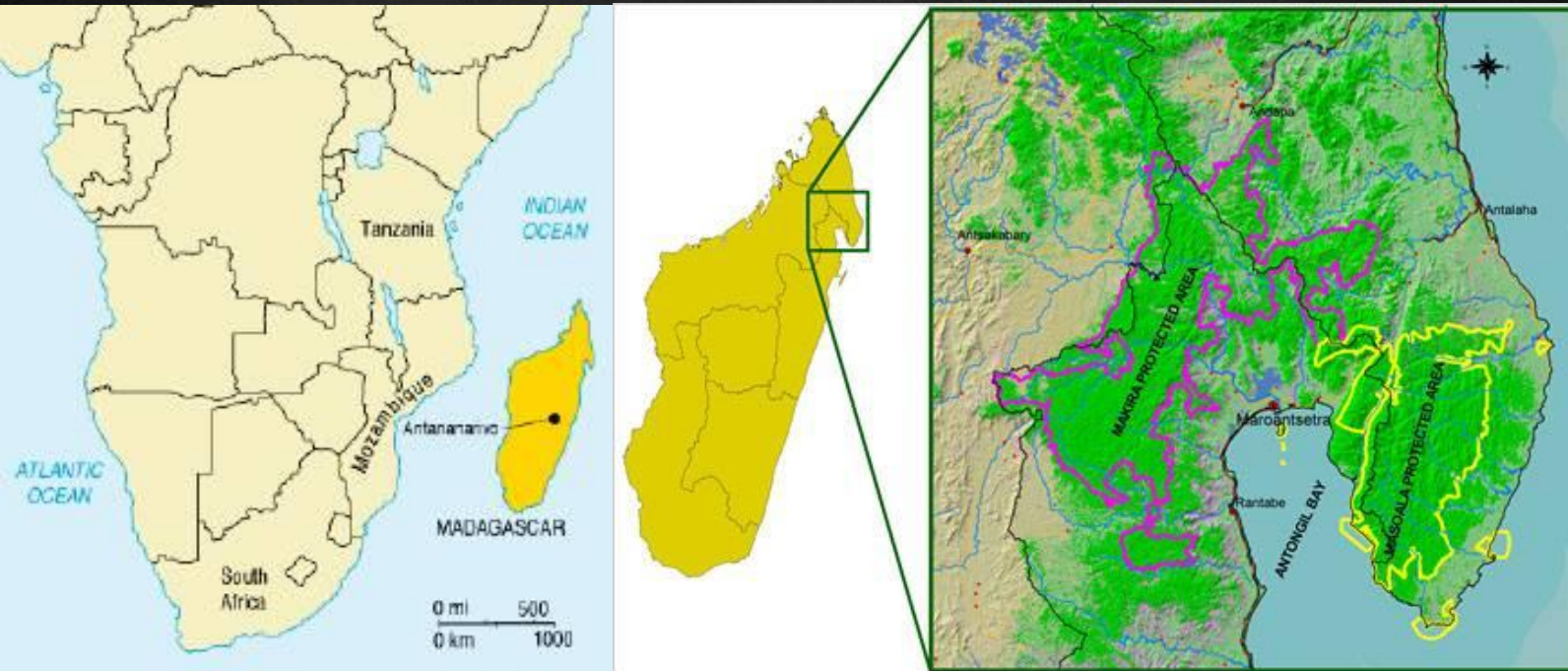


# HEALTH & ECOSYSTEMS: ANALYSIS OF LINKAGES



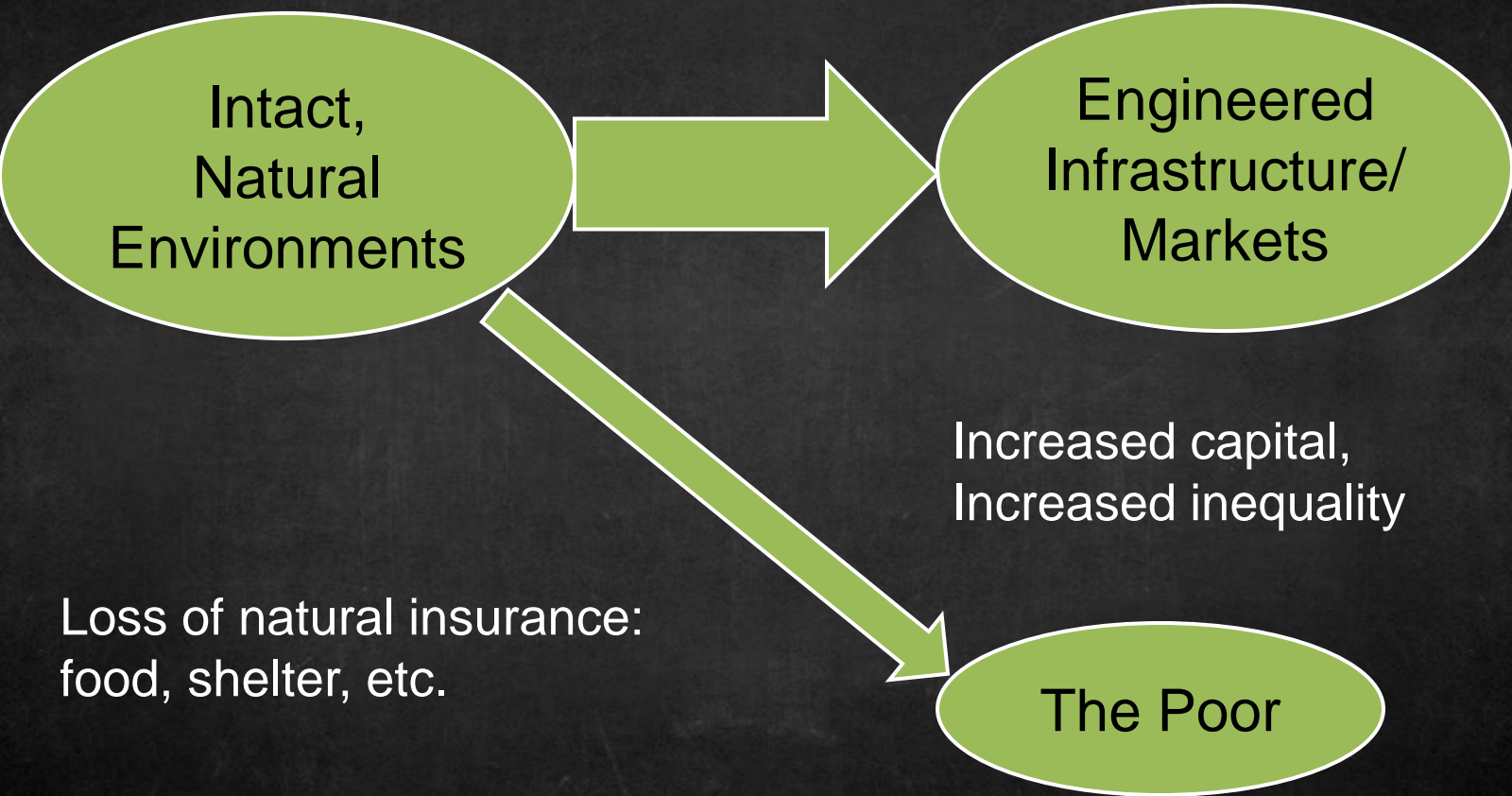


# Locating the Makira Watershed



85% of all flora and fauna in Madagascar is endemic to the country  
50% of floral diversity is found in the Makira watershed  
Lemurs and all native carnivores are endemic only to Madagascar

# Ecological Transition



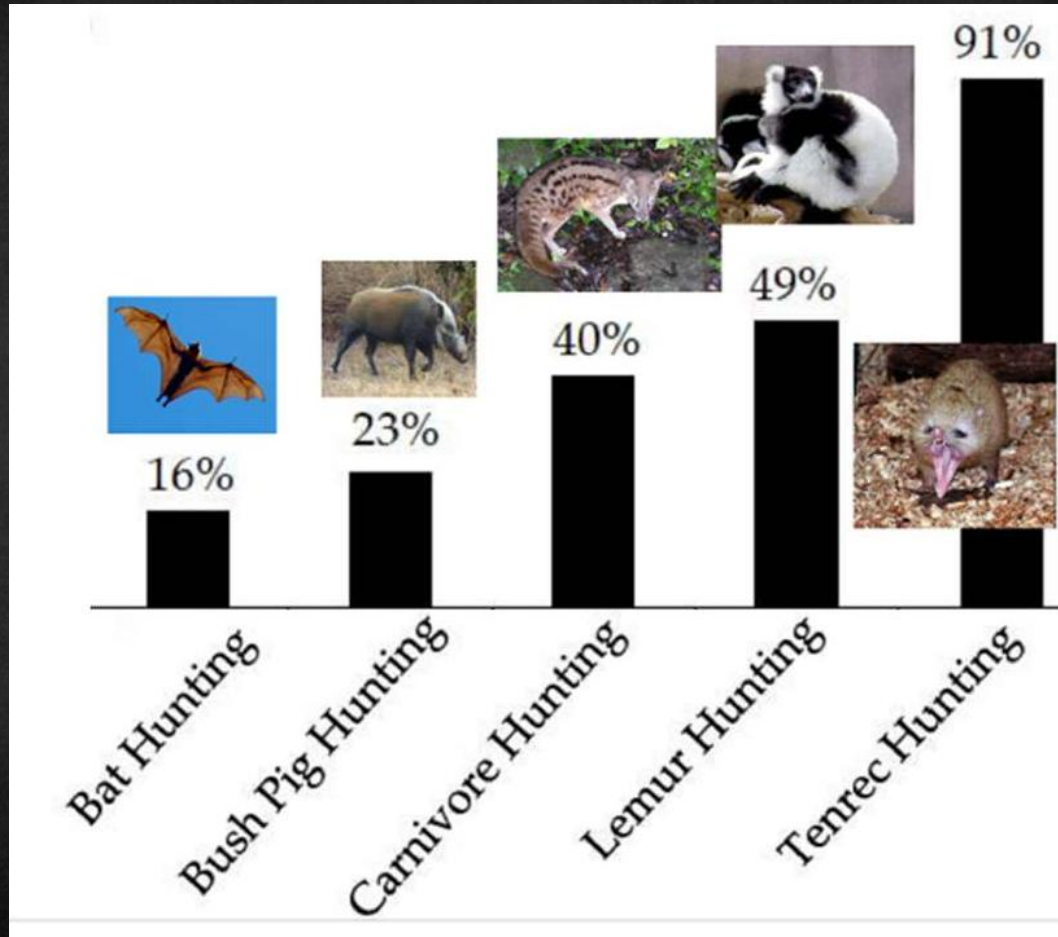


# BUSHMEAT AND ECONOMIES

The bushmeat trade is a local to global market that is valued at **billions** of dollars per year



# Biodiversity Targeted

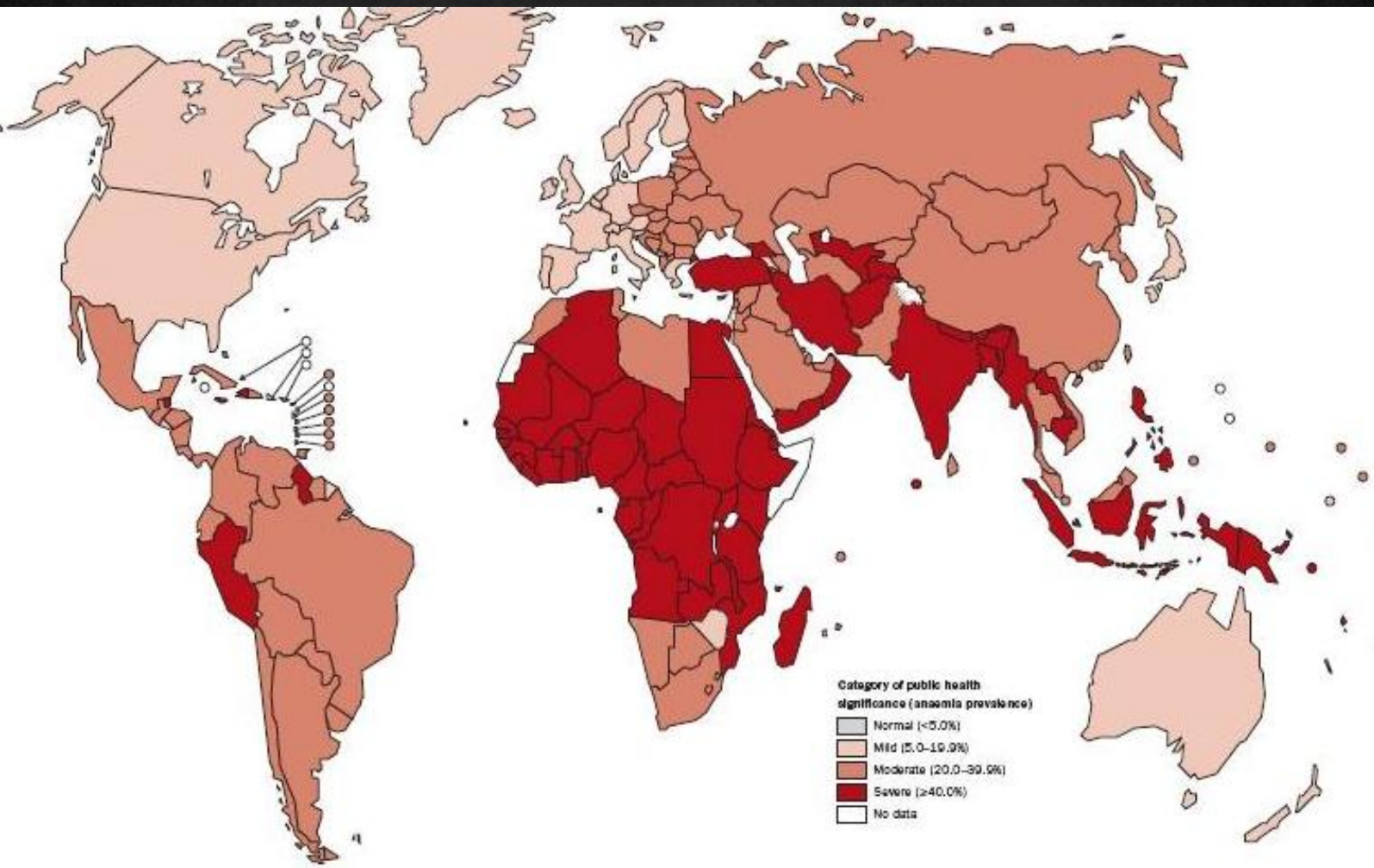






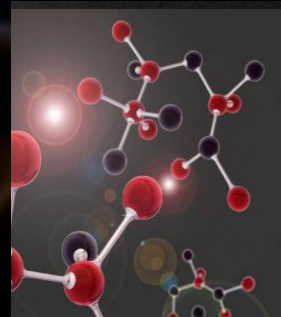
Nutritional Value of Wildlife

# Global Anemia Prevalence





# Anthropometry & Clinical Work



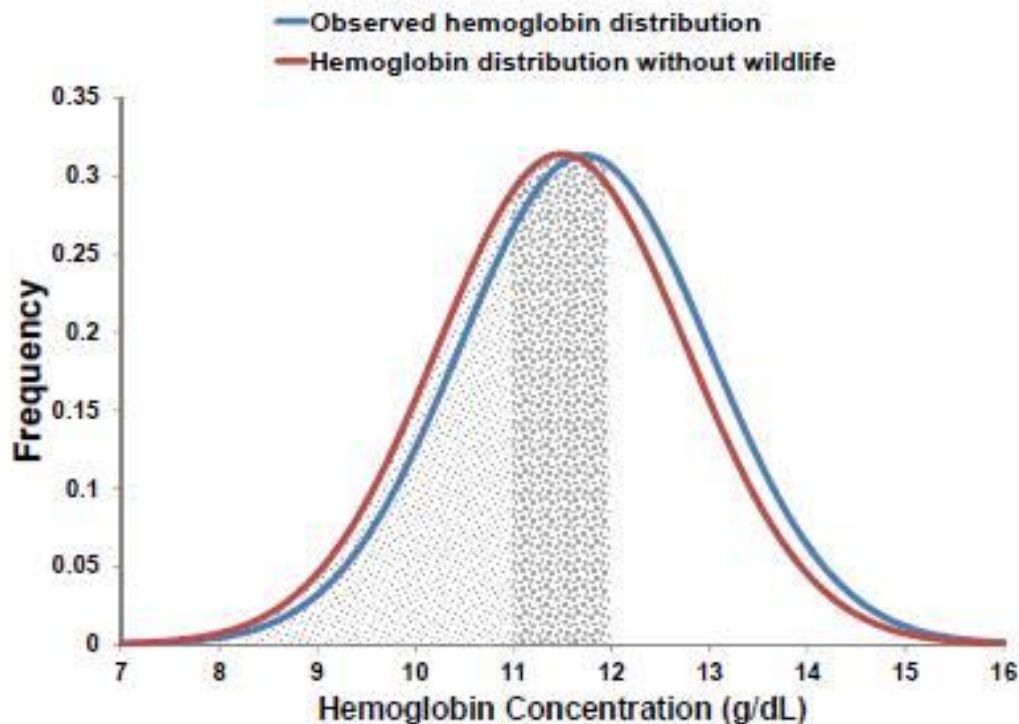
# Benefits of wildlife consumption to child nutrition in a biodiversity hotspot

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Terrestrial wildlife is the primary source of meat for hundreds of developing countries (18). IDA is caused by the inadequate in-

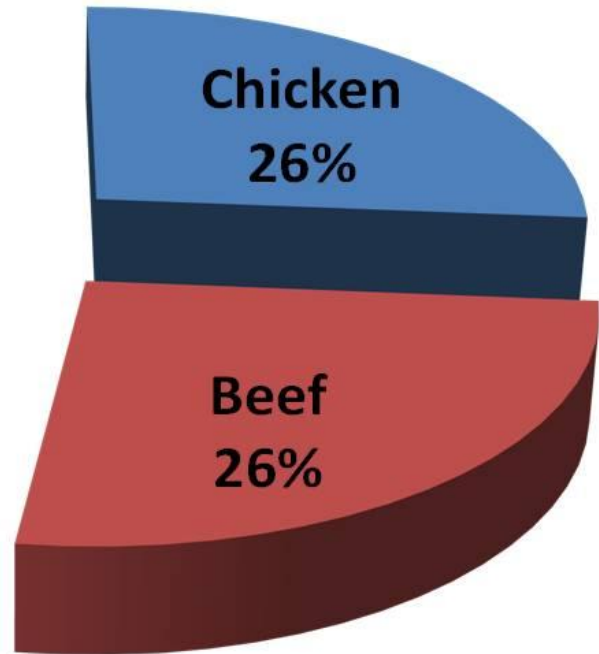
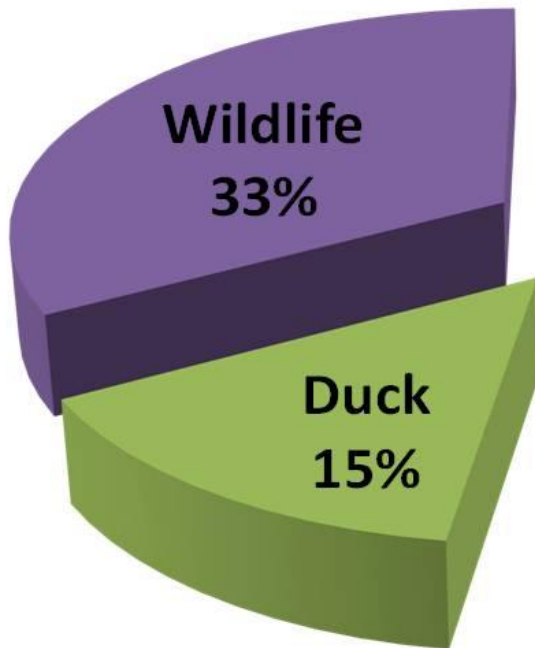




# Consequences of Anemia

- 28% increase in moderate mental retardation
- Cognitive deficits have been shown to persist 20 years into the future
- 25% increase in maternal & perinatal mortality
- Anemic individuals transport 15% less O<sub>2</sub>
  - reduced physical activity

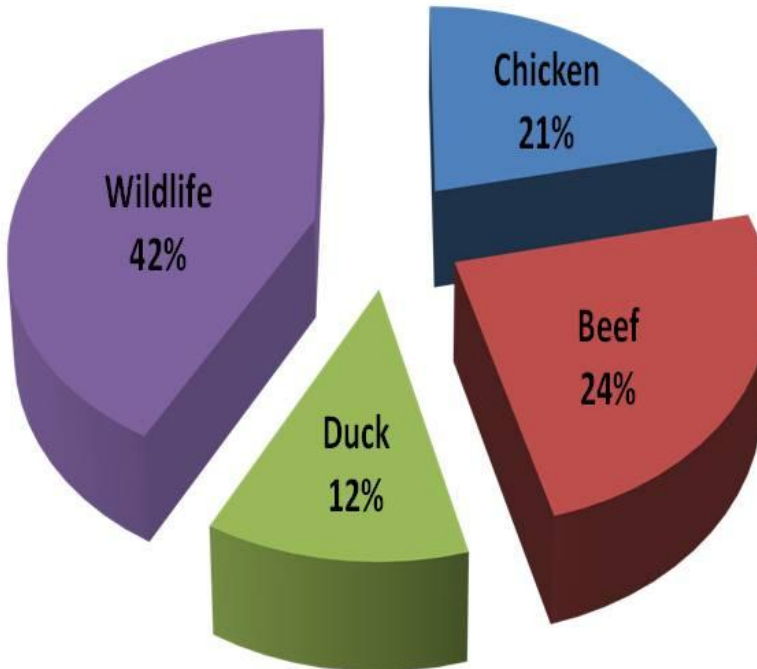
# Nutritional Importance of Wildlife



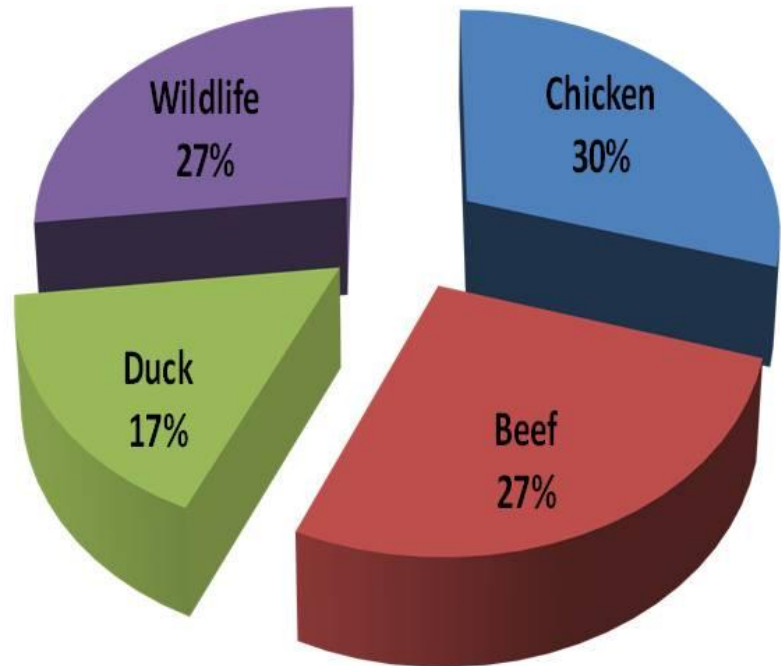


# Nutritional Importance of Wildlife

Poor Households



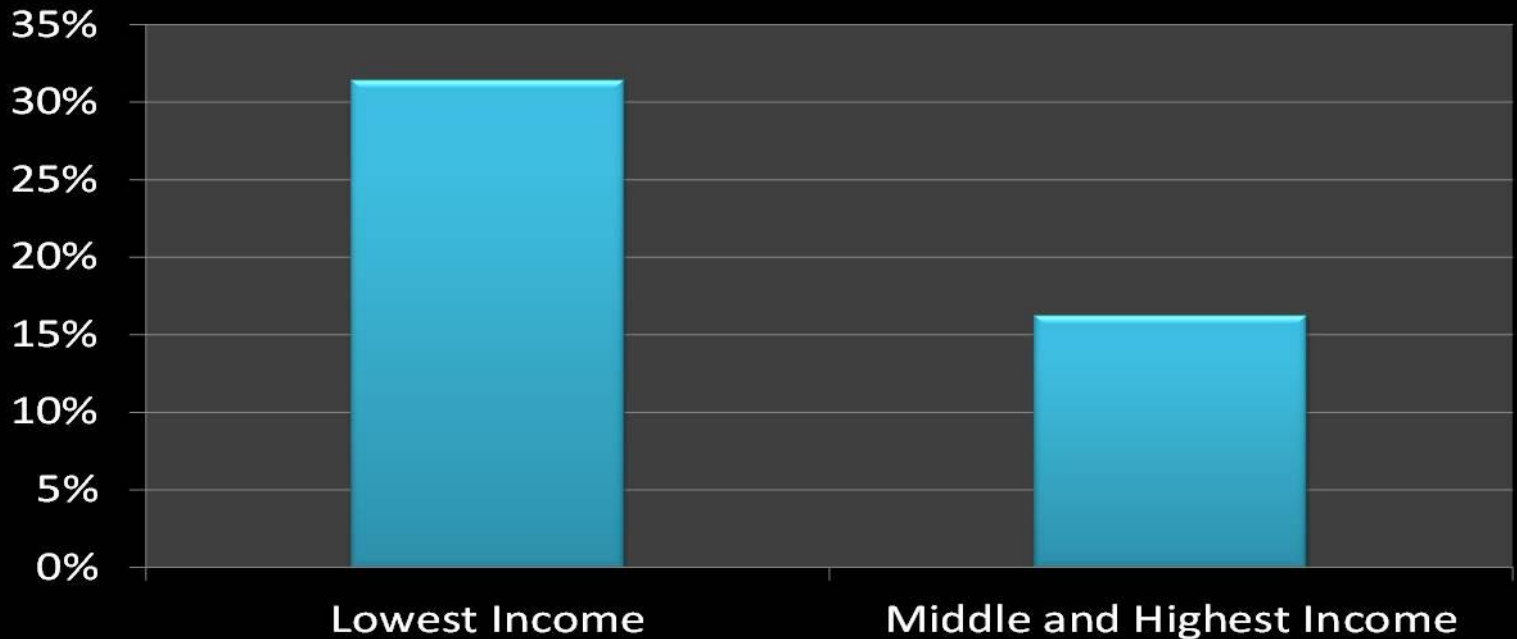
Rich Households



# Those most vulnerable, are most affected

## Inequitable effects of income on health

■ Predicted increase in anemia



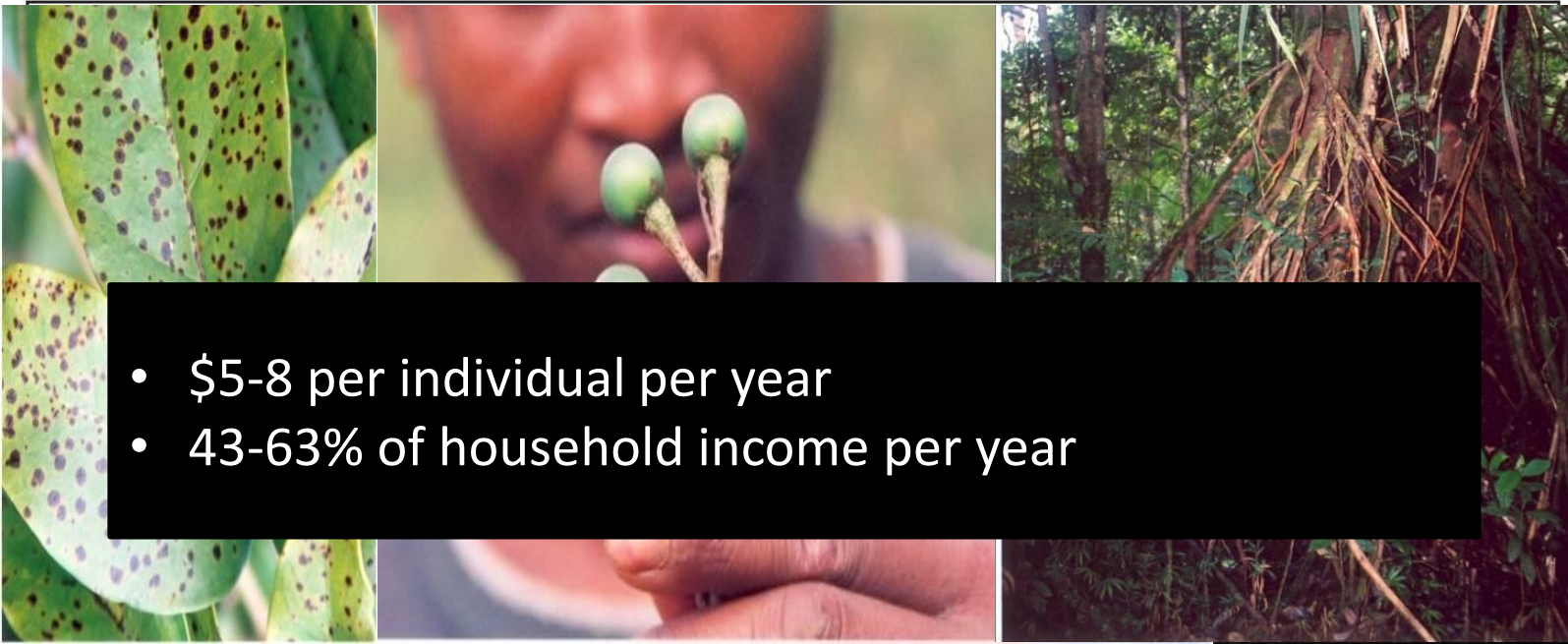


# Rainforest Pharmacopeia in Madagascar Provides High Value for Current Local and Prospective Global Uses

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- \$5-8 per individual per year
- 43-63% of household income per year



# Zoonotic Disease Sampling





# Laboratory Work

- 200 wildlife DBS
- Primates: retroviruses (PTLV3/4, SIV, SFV), pox, herpes, and bocavirus
- Bats: herpes and bocavirus
- Tenrecs: pox and plague



| Type of taboo             | Prevalence of Taboo |
|---------------------------|---------------------|
| Hornless zebu             | 55.30%              |
| Hedgehog tenrec           | 45.30%              |
| Domesticated cat          | 31.80%              |
| Octopus                   | 27.80%              |
| Blue coua                 | 23.20%              |
| Indri                     | 23.10%              |
| Eels                      | 21.80%              |
| Crested drongo            | 19.90%              |
| Bush pig                  | 18.70%              |
| Insectivorous bats        | 18.20%              |
| Madagascar blue pigeon    | 17.50%              |
| Flying fox                | 15.80%              |
| Taro leaves               | 14.30%              |
| Madagascar magpie robin   | 13.90%              |
| Eastern woolly lemur      | 12.80%              |
| Madagascan rousette       | 12.50%              |
| Malagasy coucal           | 11.10%              |
| Aye-aye                   | 11.10%              |
| Sea turtle                | 10.00%              |
| White-fronted brown lemur | 8.60%               |
| Ringtailed mongoose       | 7.80%               |
| Fosa                      | 7.70%               |
| Eastern bamboo lemur      | 7.70%               |
| Red-bellied lemur         | 7.10%               |



# Successes

- Culture
- Religion
- Gender Equity
- Economics



*Ny teny toy ny atody; ka fo, manan-kelatra*

# Conservation as Public Health Intervention







# ACKNOWLEDGMENTS

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