Project Notebook: Orangutan Movement Ecology

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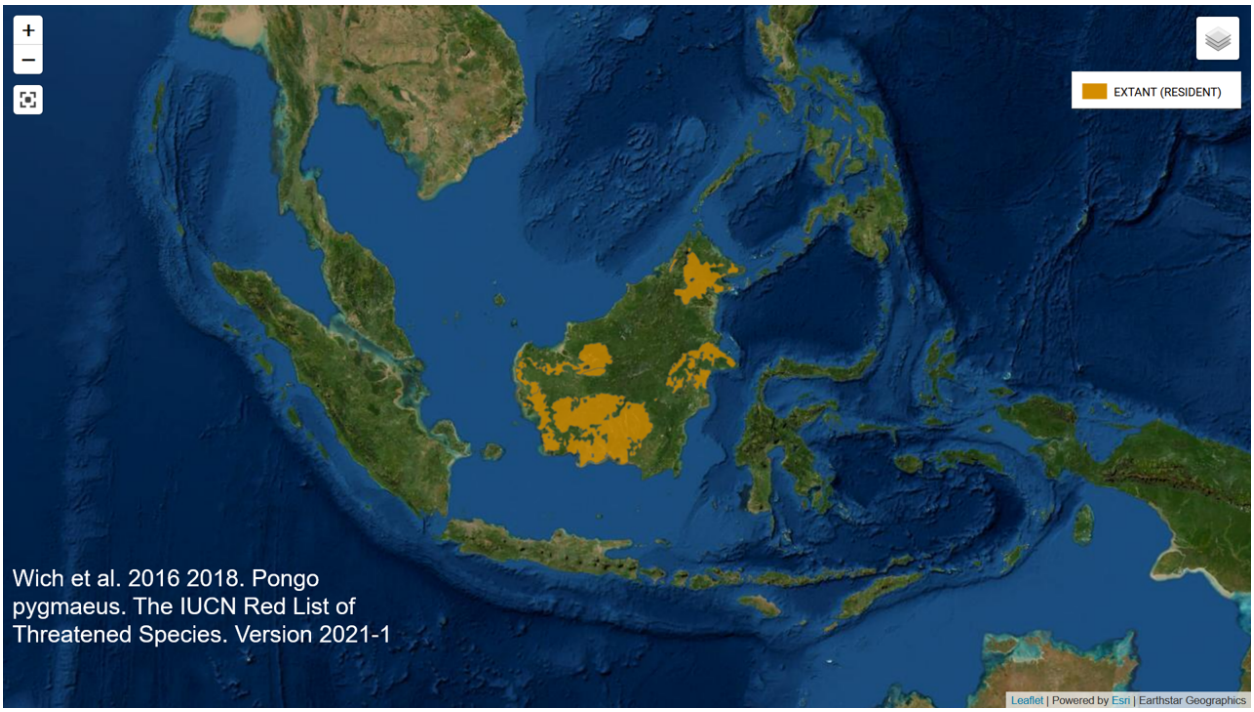

Background Information

Some Research Questions
* Decision rules for interactions: why interact versus avoid conspecifics?
* Where (in space) do males tend to successfully produce offspring?
* Do male responses to long-calls (by others) depend on where they are within their home range?
* Do females avoid visiting areas of their home range in the direction of an unfamiliar long-call? (if so, how long does avoidance last?)

- Can we infer where males go when observers have to abandon follows?
  - Inferences of travel direction based on GPS trajectories
  - limited ability to infer exact path, but can investigate habitat suitability (via terrain/elevation, NDVI, etc.) to predict where
- Does movement ecology and habitat selection vary across age-sex classes? (via SSFs? to account for movement decisions)
  - How do subadult and unflanged males simultaneously avoid (spatially) sexually mature males while gaining necessary resources and maximizing possible overlap with adult females?

  - a matter of spatial or temporal avoidance? or both (e.g. use of overlap zones with adult males during 'safe' periods when those males are elsewhere) - likely only something that could be answered via GPS collar data

  *Differences in movement patterns characterized by SSFs between sites?? (e.g. between Bornean or Bornean vs. Sumatran)

- Do orangutans remember previous negative interactions in space (avoidance of locations over short or long-term scales) - *Does this memory degrade over time?*
- How do site familiarity, distance to conspecifics, habitat structure (LiDAR), and resource availability affect nest site selection across age-sex classes?
- characteristics of movement patterns within familiar vs. highly visited areas of home range (step lengths, prolonged vs direct paths)

Some data questions:

- How much human activity occurs surrounding and within the field site (LANDSAT maps?)
- How often are two interacting animals observed simultaneously?? (rely on what observers count as interactions?)
- If certain individuals die/drop out - need to figure out best method of truncate observations within a model (rather than throwing data away) is the response
- What is an interaction? does this NEED to be based on observers, or can we use a behavioral change point?? - I can imagine orangutans know FAR before the observers know. **BUT** at the same time, many wont change their behaviors for a while (e.g. I've watched monkeys look at predators until they come within a certain distance...)
- refine research question(s) into distinct hypotheses/predictions
- What data variables are included in the long-term set, what else would be useful (e.g. NDVI??)
- NDVI vs. EVI vs. food availability data - EVI/NDVI likely incredibly homogeneous and unsuitable - way of creating a raster based on behavioral data (likely not, no veg plots only transects?)
- LiDAR - likely for only one year but structural components likely key for step-length/turning angles
- replicates on each identified individual - ideally somewhat even between 'seasons'
- Possibility that factors other than conspecific risk and resource availability affect local movement patterns - what about risks from humans, risks from other species to infants? (clouded leopards or people??)