

Hello all,

With apologies for the delay, I'd like to offer a scale for ranking one's species desiderata. I started developing it for birds nearly 20 years ago (my interests span many taxa) and it has gone through several iterations. I hope I managed to adjust it properly for mammals, among which metrics such as morphology and taxonomic uniqueness – let alone the cuteness factor - are more prominent than with birds, while measures such as color and vocalization are less pronounced. Another challenge was converting the scale from chart format into text.

First, an explanation of the method. Then the scale itself.

Use of the scale is meant to be independent of one's life list. That is, it doesn't take into consideration whether one has seen a given species already. The logic:

1. A past observation does not turn an appealing species unsightly, nor does a lack thereof turn a less attractive species alluring. If one's life list were a factor, some majestic species could rank lower than plain ones by virtue of having been seen already. Or, two nearly-identical species could have different ranks because one would have been seen previously, the other not. Such issues would undermine a systematic approach to evaluation, as will be shown below.
2. The scale does not aim to bypass one's biases and preferences, but the whole idea is to apply these in a consistent, systematic manner. Whether or not one has seen various species previously is neither systematic nor consistent.

Thus, if you wish to create a "most wanted" list, you can use the scale to rank various species, then arrange them in rank order and cross off the ones you have seen already. Or, list only species you have never seen, then rank them.

What, then, makes one species more desirable than another? The first and most intuitive factor is physical appearance. Originally (long ago, with birds) I had attempted to quantify appearance via formulas; specifically, by assigning species numerical index scores with subcomponents corresponding to size, shape, color, pattern, contrast etc. But trials proved this ostensibly-objective approach ineffective (not to mention impractically tedious). Here is why:

* Physical attributes are not comparable among species. For example, is the giraffe's long neck equal to, or greater / lesser than, the elephant's long trunk ? There is no math to such things. How does one antelope's long, straight horns compare with another antelope's long, curved horns ? And so on. It is possible to break physical attributes down to the micro-details and rank each mathematically, but this is ultimately superfluous given the goals and becomes counter-productive.

* One would think that large animals are more impressive or attractive than smaller ones, but this doesn't work. E.g. is the largest antelope – Giant Eland – more attractive or special than the smallest, the pocket-sized Royal Antelope ? Is the standard-issue Common Hippo "better" than the smaller Pygmy Hippo ? Is the smallest fox, the Fennec, less attractive than its larger relatives ? And so forth. Therefore larger size should not categorically equate with a higher desirability score.

* One might think that such colorful animals as Marbled Polecat, Sifakas, or African Wild Dog should rank higher - i.e. be more attractive - than monochromatic ones. But again this isn't the case. E.g. Polar Bears, Red River Hogs, melanistic 'panthers' and black wolves are attractive (among other reasons) by virtue of being more-or-less unicolored. Otherwise, a bicolored animal could be as bold & striking as the Malayan Tapir, or less so as the Honey Badger or Bontebok, or as plain as a typical mouse (dun above, white below). Quantity also matters: e.g. two species could have reddish pigmentation but it might be extensive on one, minimal on the other. And so on. Hence multiple colors don't automatically equate to greater attractiveness. Trying to formulate such matters mathematically is both complex and superfluous.

* Patterns cannot be compared directly either. E.g. zebras, Tiger, Numbat and Zebra Duikers are all striped but in different ways, producing disparate visual effects. Or, Cheetahs and Jaguars are both spotted but dissimilarly. And highly patterned animals, e.g. Ocelot, are not necessarily more attractive than unpatterned ones, e.g. Jaguarundi. So being patterned in a certain way, or at all, should not automatically raise a species' score or desirability.

* Body shapes too are not comparable. Is the Aardvark's shape more unique or attractive than the Platypus' ? A pangolin's more than an elephant's ? A mouse's more than a vole's ? And so on. Yet again, this is not a matter of mathematical, objective quantification.

Solution: physical appearance should be evaluated as a whole, i.e. as an emergent property, not deconstructed into components. Size, shape, color, pattern etc. all interact to produce a particular impression of the beast, and it is this impression that counts.

Factors other than physical appearance also render some species more desirable than others. Notably:

- * Taxonomic uniqueness.
- * Attractive behaviors (displays, playfulness, acrobatics etc.).
- * Unique and / or impressive vocalizations (e.g. wolf, howler monkeys).
- * Rarity, natural or anthropogenic.
- * Greater threat of extinction, urgent conservation status.
- * Geographic range is remote, very small, or difficult to access.
- * Species is difficult to locate and / or observe within its range & habitat.
- * Species is little known and little studied.
- * Association with dramatic habitat (e.g. mountains, dense rainforests, caves).
- * Cultural significance and value (e.g. lion, elephant, wolf, bear, bison).

Like physical attributes, these aren't comparable. For example, should a little-known species with a remote range rank higher than, or equal to, one that is taxonomically unique and endangered? The said factors, henceforth "merits", should also be considered collectively to produce a 'profile' of a species' desirability.

With all of the above in mind, now comes the actual ranking scheme. The ranks range from 1-lowest to 10-highest. Each species is evaluated according to the following criteria:

- * Physical appearance.
- * Non-physical merits.
- * Location of the species on one's wish list.
- * How much time, money, effort, and hassles one wills to invest in seeing the species.

The ranks are meant as guidelines, not absolute rules. Rank assignment is ultimately subjective. If you think that elephants and lions and Giant Pandas – magnificent as they are – have been over-popularized / "overdone" to death, feel free to downrank them. If a certain species (or family) fascinates you deeply, uplist it. If you prefer carnivores to herbivores, or large animals to small ones, rank them accordingly. If a certain species seduces you with its cuteness, by all means upgrade its rank.

The idea is that using the following scheme, one's biases will be applied in a consistent, systematic manner. The subjective evaluations will be standardized. After ranking various species, comparing them and then adjusting the ranks, you will soon develop a methodical sense and be able to evaluate animals more readily and rapidly.

The ten rank descriptions are as follows, with possible examples to provide an idea of what they represent. Read and decide which rank best describes a given species in your view, then assign it the rank number. As noted below, most species should fall into ranks 2-6; fewer would rank as 1 or 7, even fewer as 8, and very few as 9 or 10. (Statistically speaking, a right-skewed frequency distribution).

RANK 1: no species is worthless but on a comparative basis, some must end up on the bottom. These are the world's least-attractive species.

This rank should be used conservatively as few species truly qualify. It is reserved exclusively for small rodents and bats. That's because rodents, bats and shrews constitute the bulk of mammalian species. Hence all other mammals are minimally unique simply by virtue of not being a mouse / rat / bat / shrew. But typically, common rodents and bats are relatively easy to observe, while even common shrew species tend to be somewhat elusive and frequently require trapping to see. Hence the minimal rank for shrews ought to be 2.

Visually, rank 1 species are entirely 'featureless' and as plain as can be. They are not impressive or intriguing in any way. No morphology, pigmentation or pattern of note; absolutely no color save gray / gray-brown / dun. They have no other merits or 'saving graces' whatsoever; they are neither unique taxonomically, nor rare, nor difficult to observe, nor have remote ranges etc.

These species lie at the very bottom of one's wish list. You would not expend any amount of time, money or effort to chase them. You wouldn't travel to see them. When planning any trip, they would not make the itinerary. Once seen, you wouldn't desire to see them again.

Possible examples: House Mouse, Norway Rat, Black Rat.

RANK 2: these species are runner-ups, or -downs, to rank 1. They ought to be typical members of large taxonomic orders or families; species with specialized or uncommon body shapes should rank higher than 2.

Visually, these animals are dull and almost entirely 'featureless' save for very minor morphological attributes (e.g. a fluffy tail tip, slightly elongated ears), or very minimal pigmentation beyond gray / gray-brown (e.g. a spot or two, a back stripe, white "socks"). They are far below average and not distinguished or impressive in any way. They might have a single non-visual merit but no more. Even then, the merit is typically limited. (E.g. unobtrusive, but not difficult to observe).

These species lie near the bottom of one's wish list. You would not chase them unless this were exceptionally easy. E.g. you might take a quick side trip to see them but nothing more. They would not make the itinerary of most planned trips. No problem missing these species.

Possible examples: Short-tailed Shrews (*Blarina* sp.), common mice, rats and voles of stereotypical rodent shape - i.e. not jerboas etc. (Most voles would rank as 1 visually but they can be tricky to see well, hence the upgrade).

RANK 3: these species may exhibit marginally unique or interesting morphology; and / or a little pattern or color (i.e. not all plain). However, they are drab, unimpressive and all-round unremarkable. Squarely below average, though not quite as 'featureless' and insipid as ranks 1 and 2. They may have 2 or 3 non-visual merits, e.g. taxonomic uniqueness.

These species are low on one's wish list. You might chase them if easily accomplished but wouldn't expend much effort therein. E.g. you'd be willing to take a full day-trip to see them. They may be included on trip itineraries but if so, as very low priorities. It is usually acceptable to miss these species.

Possible examples: gerbils, Degu, common insectivorous bats, common shrews, cavies, Rock Hyrax, Eastern and European Moles, Nutria, Muskrat, Pocket Gophers, Mole Rats.

RANK 4: these species may be distinct morphologically but not highly so. Their pigmentation may feature notable pattern or color (beyond gray-brown) but they are neither striking nor particularly impressive. While surely interesting, they are somewhat drab and slightly below average visually. A 'cuteness factor' may be present. They may have a few non-visual merits, e.g. slightly difficult to observe or association with appealing habitats.

These species lie a bit below the middle of one's wish list. You might expend a little time, money and effort chasing them, e.g. an overnight trip. Normally they would be included on trip itineraries as low priorities. May be skipped if inconvenient to pursue. Perhaps a touch of disappointment if missed.

Possible examples: Virginia Opossum, Edible and Garden Dormice, Harvest Mouse, Bottlenose Dolphin, Harbor Porpoise, marmots, Eastern / Western Gray Squirrels, California Ground Squirrel, Prairie Dogs, Vervet Monkey, Olive Baboon, Wildcat (i.e. *Felis sylvestris*), Star-nosed Mole, typical pikas.

RANK 5: these are one's typical or 'normal' mammals, neither below nor above average on any count. They may be somewhat unique morphologically and / or taxonomically. Visually they are fairly striking, or impressive, or pretty, or interesting. They may be prominently patterned, attractively colored, or quite cute. They may have a fair number of non-visual merits, e.g. Near Threatened status, moderately remote geographic range or elusiveness.

These species are in the middle of one's wish list. Solidly chase-worthy (no more "may" or "might" chase, but "will" chase.). You'd certainly expend time, money and effort pursuing them, but not large amounts thereof and no going through major hassles. E.g. you'd readily take a 2-3 day road trip to see them. They would always be included on trip itineraries as medium priorities, but may be skipped in a pinch. You would be disappointed to miss them, but not strongly.

Possible examples: Common Raccoon, Red Fox, many chipmunks, Roe / Mule / White-tailed Deer, Wild Boar, Collared Peccary, Grant's / Thomson's / Mountain Gazelles, Impala, Red and Gray Kangaroos, Agile Wallaby, Dunnarts, Common Ringtail Possum, Garden Dormouse, American Red Squirrel, Golden-mantled Ground Squirrel, Northern / Southern / Siberian Flying Squirrels, typical hares and rabbits, Coyote, Jackals, common flying foxes, Long / Short-beaked Common Dolphins, Striped Dolphin, Pilot and False Killer Whales, Gray and Harbor Seals, California Sea Lion, Ring-tailed Lemur, White-nosed and South American Coatis, beavers, Bighorn Sheep, Wildebeest, Waterbuck, Egyptian Mongoose, Common Squirrel Monkey.

RANK 6: these are `normal' species that are nevertheless above average. If they had a "Like" button, you'd readily press it. Visually they are striking, impressive, interesting, pretty or undeniably cute. Frequently they are also unique morphologically and taxonomically, though not exceptionally so. They may be boldly patterned or colored. Many will have multiple non-visual merits such as a Vulnerable or even Endangered conservation status, remote range, considerable elusiveness and association with dramatic habitats.

These species lie somewhat above the middle of one's wish list. Accordingly you would not hesitate to expend time, money and serious effort chasing them. Furthermore, in the process you might be willing to negotiate some hurdles that normally you may not entertain. You might consider travelling across your continent to see them, but perhaps not long-range, overseas travel (dedicated especially to them). These species would constitute medium-high priorities on trip itineraries. You'd be reluctant to miss them and certainly feel disappointed if this happens.

Possible examples: Onager, Kiang, Brazilian Tapir, Red River Hog, Ethiopian Wolf, Arctic Fox, Sei Whale, Atlantic and Pacific White-sided Dolphins, Beluga, Fallow Deer, Axis Deer (Chital), Muntjac, European Hedgehog, Bettongs, Mulgara, Eastern Quoll, Common Wombat, European and American Badgers, Honey Badger, Mink, Mustela sp. weasels, Striped and Spotted Skunks, Meerkat, Kirk's and Gunther's Dik-Diks, Roan Antelope, Greater and Lesser Kudus, Sitatunga, Nyala, Gemsbok, Bontebok, Elk (i.e. *Cervus canadensis*), Ringtail and Cacomistle, Kinkajou, Olingo, galagos, Eurasian Red Squirrel, Capybara, American and Indian Crested Porcupines, agoutis, Plains Viscacha, Bobcat, African Golden Cat, Pallas' Cat, Ribbon Seal, Mediterranean Monk Seal, Common Tenrec.

RANK 7: here the gears shift up. To be designated 7, a species has to be exceptional in some way, visually or otherwise. `Normal' species do not qualify even if attractive, impressive or elusive. That is, a 7 species shouldn't be a typical member of a large taxonomic family (or genus) unless non-visual merits are considerable. Hence this category should be used conservatively.

Visually, these species frequently elicit an involuntary "Oh !" or "Wow !" when seen. They have special allure, distinctly above average. They are highly impressive, imposing, striking, intriguing or remarkably handsome (or cute). Many are unique and interesting morphologically and taxonomically. They represent some of the finer species that a continent, or a taxonomic family, has to offer.

Non-visual merits are usually prominent at this level. These animals may be variously endangered, rare, difficult to observe, little known, associated with dramatic habitats or exhibiting special behaviors or vocalizations. Their geographic ranges may be remote or highly restricted.

These species are in the higher tier of one's wish list, visibly above the middle. You would chase them with extra zeal and make special efforts, as well as appreciable time / money / effort investments, to see them. This includes negotiating hurdles and possibly tolerating some tribulation that you wouldn't consider otherwise. You'd always be willing to travel across your continent in pursuit of them, and might weigh long-range international travel too (dedicated especially to them). These species constitute high priorities on trip itineraries, the ones you particularly want to see and about which, if missed, you would be disappointed strongly.

Possible examples: Common Hippopotamus, American and Asian Black Bears, Sun Bear, Sloth Bear, Nine-banded Armadillo, Baird's and Mountain Tapirs, Common / Burchell's and Mountain Zebras, African Wild Dog, Gray Wolf, Maned Wolf, Bush Dog, Striped and Brown Hyenas, Aardwolf, Gray and Humpback and Southern Right Whales, Killer Whale, Heaviside's Dolphin, Burmeister's Porpoise, Amazon River Dolphin, Cuvier's Beaked Whale, Mesoplodont Beaked Whales, Caribou, Northern Pudu, chevrotains, Northern and Southern Tamanduas, sloths, Giant Armadillo, Elephant Shrews, Colugos, Guanaco, Golden Moles, Russian and Pyrenean Desmans, Red-and-white Giant Flying Squirrel, tree kangaroos, Southern Hairy-nosed Wombat, Tasmanian Devil, Quokka, Black-footed Ferret, Fisher, Martens, Tayra, Greater and Lesser Grisons, River and Eurasian Otters, Fossa, typical genets and civets, Fanaloka, Linsangs, Falanoucs, Gerenuk, Bongo, Blackbuck, African Buffalo, Markhor, Wild Yak, Nilgai, Saiga, Mountain Goat, Chamois, Pronghorn, Tibetan Antelope, Long-tailed and Tree Pangolins, Babirusa sp., Indri, typical tarsiers and lorises, Mandrill, Red Panda, Mara, West Indian Manatee, Tree Shrews, Lowland Streaked Tenrec, Canada and Eurasian Lynxes, Caracal, Serval, Mountain Lion, Clouded Leopards.

RANK 8: this is a very high rating to be used sparingly. It includes species that are not only unique but outstanding, the best that a continent or a taxonomic family has to offer.

Visually these species are superlative. They are highly extraordinary, stunning, majestic, spectacular, beautiful or unbearably cute. Many will have exceptional merits, e.g. critically endangered, very poorly known, rarely observed or having a tiny, highly remote geographic range.

These species are very high on one's wish list, the ones considered "have to see". They constitute the main targets on any continent. You would expend considerable amounts of time, money and effort to find them, including travel overseas. These are the species around which major trip are planned, and which rank as very high priorities. To see them you might be willing to endure major trouble, hassles and ordeals that you wouldn't consider for other species. If you try for them and miss, you would not only be severely disappointed but probably make additional attempts.

Possible examples: Wild Bactrian Camel, African Wild Ass, Pygmy Hippopotamus, White and Indian Rhinos, Malayan Tapir, Grevy's Zebra, Przewalski's Horse, Brown Bear, Giant Panda, Polar Bear, Spectacled Bear, Fennec Fox, Fin Whale, North Atlantic and North Pacific Right Whales, Bowhead Whale, Pygmy Right Whale, Pygmy and Dwarf Sperm Whales, Baird's and Northern Bottlenose Whales, Hourglass and Commerson's Dolphins, Southern Right Whale Dolphin, Spectacled Porpoise, Ganges River Dolphin, Moose (i.e. *Alces alces*), Silky Anteater, Pink Fairy Armadillo, Cuban and Hispaniolan Solenodons, Wolverine, Sea Otter, Numbat, Greater Bilby, Koala, Short-billed Echidna, Zebra Duiker, Sable Antelope, Dama Gazelle, Takin, White Oryx, Addax, Hirola, Muskox, Gaur, Giant and Chinese and Sunda Pangolins, Dugong, Amazonian and West African Manatees, Jaguar, Cheetah, Leopard, Snow Leopard.

RANK 9: these species are so extraordinary and exceptional as to be finalist contenders for the title, "World's Best Mammals". Few species qualify. Most outstanding mammals will rank as 7 or 8.

These species are frequently quasi-legendary or profoundly iconic. They are superlative even among the elite. They are competitive not only on continental scales but globally. Their visual and non-visual merits are extraordinary on all counts. This category also includes all species that are suspected, but not conclusively shown, to be extinct.

These species are near the top of one's wish list. To seek them you would expend amounts of time, money and effort that approach the limits of your ability. International travel would be a 'no-brainer' as these are the highest world targets and top priorities. To see them you may be willing not only to undergo major difficulties and tribulations, but to mount a veritable expedition. If you try for them and miss, you would retry as many times as you can.

Possible examples: Black and Sumatran and Javan Rhinos, Blue Whale, Sperm Whale, Narwhal, all elephants, Giraffe, Okapi, Platypus, all Long-beaked Echidnas, Walrus, Gorillas, Chimpanzee, Bonobo, Orangutan(s), Aardvark, Giant Anteater, American and European Bisons, Saola, Lion, Tiger. If extant, also Thylacine and Kouprey.

RANK 10: this is the only category that's entirely subjective. It encompasses one's top picks from rank 9 (possibly also 8) for the title, "World's Best Mammals". No need to discuss visual or non-visual merits as this is strictly a matter of personal choice.

These species are at the very top of one's wish list. Seeing each of them would constitute a life goal. To see them you would do whatever you are able, possibly even risking health and safety in the process.

Possible examples: presumably your spouse and children. (World's best mammals ?).

Please recall that these categories are only guidelines and all the possible examples are meant as illustrations. Feel free to evaluate species based on your personal preferences but with these ranks, you'd have a systematic method to it.

I hope this will be useful to all. Any feedback is most welcome.

Best regards,

- Eran Tomer
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