What should conservation biologists be doing? An homage to Ilkka Hanski

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It is a pleasure and an honor to dedicate this paper to my old friend and colleague Ilkka Hanski, whose work on populations and metapopulations has been so central to conservation biology.

While the accelerating loss of biodiversity has been given increasing attention recently from the biological community (Barnosky et al. 2010, Ceballos et al. 2015a, 2015b, Cronk 2016, Maxell et al. 2016), the general public is not well informed about it. This could be a side effect of the media-generated view that environmental problems are not all that important — with the possible exception of anthropogenic climate disruption. This was dramatically demonstrated in the 2016 Presidential elections in the United States in which there was almost no debate on the existential threat those problems posed to human health and well-being, indeed to the persistence of civilization. Worse yet, the new Trump administration shows every sign of deliberately speeding the destruction of biodiversity and thus speeding a collapse of civilization. But it is also clear from the activities of conservation biologists (including many ecologists, evolutionists, and behaviorists) that their training needs to be modernized, and as a result too much of their research is likely a waste of time.

Part of the problem traces to an innocent act by my hero, Charles Darwin, the greatest biologist who ever lived. He titled his magnum opus On the Origin of Species. Our attempts to preserve biodiversity today might be simpler if he had called it On the Differentiation of Populations. It has long been evident that species were simply arbitrary segments of a differentiating tree of life: populations showing various degrees of difference from other populations, but being distinct enough for a taxonomist to think of them as “different kinds.” This has become super-evident in recent years as molecular phylogenies of recent radiations (e.g., Moyle et al. 2009) show continuous degrees of differentiation of populations, just as one would expect. That makes it clear that the whole “what is a species?” literature is nonsense — the intellectual equivalent of geologists perpetually trying to define a “mountain.” Are Lhotse and Nuptse different mountains or submountains of Everest? The instructive thing about the species debate, which has persisted to this day half a century after the issue was basically settled (Ehrlich 1961, Sokal & Crovello 1970), is how unnecessary the fuss has been (Ehrlich et al. 2004: 297) and how much human brains like to fraction continua into discrete categories (think colors). For communication “species” and “population” — like “mountain” and “hill” and “red” and “yellow” — are useful and easily understood even though they are segments of continua and impossible to satisfactorily define.