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50/500 Rule Population

Rosenfeld, J. S. 50/500 or 100/1000? Short- and long-term recovery objectives aligned and MVP. Biol. Preserve. 176, 287-288 (2014). The minimum viable population (MVP) is a lower limit for the population of a species so that it can survive in the wild. This term is often used in the fields of biology, ecology and conservation biology. MVP refers to the smallest possible size at which a biological population can exist without being threatened with extinction by natural disasters or demographic, ecological or genetic stochasticity. [1] The term "population" is defined as a group of individuals that interbreed in a similar geographic area and experience negligible gene flow with other groups of the species.

[2] Typically, MVP is used to refer to a wild population, but can also be used for ex situ conservation (zoo populations). […] Recommendations for 50/500 rules, Red List criteria and population viability analyses. The one we missed. 100/1000 is the new 50/500. Multiply by 10 for the census population size at […] Two of the most important measures of species viability are minimum viable population size (MVP) and annual population growth rate. MVP size is the smallest size in which a population can persist despite exposure to the effects of various factors[4,5,6,7,8]. In practice, it is generally considered that the MVP corresponds to the size of the population to be sufficient to ensure a predetermined probability of persistence over a given period of time in the future[1,9]. MVP has become particularly useful in managing conservation efforts for endangered species by providing a scientific target frequency in a recovery plan.[10,11] For example, IUCN criterion D categorizes the extent of the threat according to a set of population size thresholds, while criterion E uses the projected risk of extinction of a species over a given period of time (IUCN 2005). Traill et al.[12] pointed out that the number of studies with MVP has gradually increased over the past few decades, with no signs of declining use. This is partly because conservation agencies need to make quick decisions about conservation goals, often with limited data availability. At the same time, it is also generating interest in developing a robust general guideline for the determination of MVP.[13,14] Such a guideline could use baseline life-cycle characteristics or other ecological attributes[13,15] that are more readily available.

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research on fish MVP. Chen, S. & Watanabe, S. Age-dependent natural mortality coefficient in fish population dynamics. Nippon Suisan Gakk 55(2), 205â208 (1989). This idea fits perfectly with the image of Noah`s animals walking "twice two" in the ark. But the science of "minimally viable populations" tells us a different story. Jamieson, I.G. & Allendorf, F. W. How does the 50/500 rule apply to MVPs? Ecol Trends.

Evol. 27(10), 578â584 (2012). Brook, B. W., Traill, L. W. & Bradshaw, C.J. Minimum viable population sizes and global risk of extinction are not linked. 9(4), 375-382 (2006). However, to maintain the evolutionary potential – to remain genetically flexible and diverse – iucn criteria suggest that we would need at least 500 effective individuals.

This requires a population of 2,500 to 5,000. Traill, L.W., Brook, B.W., Frankham, R.R. & Bradshaw, C.J. Pragmatic goals for population sustainability in a rapidly changing world. Biol. Preserve. 143(1), 28-34 (2010). Population growth rate is another measure commonly used in the business case. This is a per capita rate at which the number of individuals in a population increases or decreases over time. Hutchings[17] argued that the rate of population growth ultimately determined the ability of the fish population to remain below fishing mortality and recover after its collapse.

Therefore, the population growth rate could be used to assess the intrinsic vulnerability and risk of extinction of fish species[18,19] and has been adopted by the IUCN Red List Directive and many national guidelines and criteria (e.g. American Fisheries Society)[20] as one of the main indices. In practice, however, the population growth rate is very difficult to estimate, especially for threatened species, due to a lack of demographic data[19]. Instead, correlations between life history characteristics and population growth rate were quantified to assess the vulnerability of species threatened by various ecological and anthropogenic factors.[19,20] .