Selection in male cervids should optimize allocation of nutritional resources to the competing demands of body growth versus weapon development. We investigated allocation decisions of growing and mature male white-tailed deer (*Odocoileus virginianus*) from three regions of low, moderate, and high diet quality. We tested (i) if deer under greater nutritional limitations would allocate proportionally less to antler growth; (ii) if antler and body mass became less variable with age; and (iii) if antler size consistently exhibited positive allometry with body mass across age classes and nutritional planes. Greater nutrition increased antler allocation in 2.5- to 4.5-year olds, but not in yearlings or prime-aged males. Variability of antler mass decreased with age and was generally less in more fertile regions, but body mass was equally variable across all ages and regions. Antler mass was positively allometric with body mass for all combinations of age class and region, but exhibited age- and region-related differences. Our results suggest that accruing body mass is more important to lifetime reproductive success than increasing weapon size. Reduced allometric coefficients in older males likely stems from increasing use of skeletal mineral reserves, selective pressures favoring greater body mass, and possible selection for optimal weapon strength and structure.