Igor Szczyrba* (igor.szczyrba@unco.edu), School of Mathematical Sciences, University of Northern Colorado, Greeley, CO 80639. What do the Golden Ratio and a crescent moon have in common?

We introduce geometric representations of the sequence of the $n$-anacci constants and generalizations thereof that consist of the ratio limits generated by linear recurrences of an arbitrary order $n$ with equal integer weights. We represent the $n$-anacci constants and their generalizations geometrically by means of the dilation factors of dilations transforming collections of compact convex sets with rising dimensions $n$. For instance, if we dilate unit $n$-balls with centers at $(1,0,...,0)$, then the $n$-anacci constants lead to a collection of non-convex sets with centers of mass at $(2,0,...,0)$. In particular, for $n=2$, the Golden Ratio determines the size of a crescent moon with the center of mass at $(2,0)$. (Received January 31, 2016)