1056-05-723 **H. A. Kierstead** and **A. V. Kostochka*** (kostochk@math.uiuc.edu), Dept of Mathematics, 1409 W. Green Street, Urbana, IL 61801. *Equitable list coloring of graphs with low maximum degree.* Preliminary report.

If every vertex $v$ of a graph $G$ is given a list $L(v)$ of admissible colors, then an *$L$-coloring of $G$* is any proper coloring $f$ of $V(G)$ such that $f(v) \in L(v)$ for every $v \in V(G)$. If the lists all have size $k$, then an $L$-coloring is *equitable* if each color appears on at most $\lceil n(G)/k \rceil$ vertices. A graph is *equitably $k$-choosable* if such $L$-coloring exists whenever $|L(v)| = k$ for every $v \in V(G)$.

Kostochka, Pelsmajer and West in 2003 conjectured that every graph with maximum degree at most $r$ is equitably $(1+r)$-choosable. If true, this would generalize the Hajnal-Szemerédi Theorem. It is evident for $r \leq 2$. Pelsmajer and independently Lih and Wang confirmed the conjecture for $r = 3$. Also, Pelsmajer proved that every graph with maximum degree at most $r$ is equitably $(2+\frac{r(r-1)}{2}$-choosable, and Lih and Wang proved that every such graph is equitably $(r-1)^2$-choosable.

For several reasons, the techniques previously used for ordinary equitable colorings are insufficient to handle equitable choosability. We introduce some improvements that allow us to prove that the conjecture holds for all $r \leq 7$, and that every graph with maximum degree at most $r \geq 3$ is equitably $2r$-choosable. (Received September 16, 2009)