
LONG-TERM TRENDS IN THE RELATIVE ABUNDANCE AND SIZE STRUCTURE OF SPORT FISHES IN THE FLATHEAD RIVER, MONTANA, FOLLOWING CHANGES IN KERR DAM OPERATIONS

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We studied long-term trends in relative abundance and size structure of four sport fish taxa in the Flathead River, Montana, following changes in operations at Kerr Dam. In 1997 Kerr Dam was changed from a power-peaking and load-following facility to a base-load facility. New base-load operations were designed to reduce fluctuations by establishing within- and between-day ramping-rate restrictions, i.e., maximum hourly and daily rates of change. We monitored spring and autumn trends in the relative abundance of two size classes (substock and stock) of northern pike (*Esox lucius*), *Oncorhynchus* spp., brown trout (*Salmo trutta*), and smallmouth bass (*Micropterus dolomieu*) from 1998-2008 using nighttime

electrofishing. We documented significant ($P < 0.05$) increasing trends in the autumn catches/unit effort (fish/hr) of both substock and stock sizes of all taxa, except stock northern pike. Trends in spring relative abundances were similar to those in autumn, except that increases in smallmouth bass catch rates were not significant ($P > 0.05$). We also examined long-term patterns in the size composition of fishes following changes in dam operations. All four taxa had either an initial strong downward shift in annual median total length or a decrease in the minimum sizes of fish captured, or both, a pattern consistent with enhanced survival of smaller fishes and highly suggestive of benefits from changes in dam operations. Our results imply that modifications in the operation of Kerr Dam led to significant increases in relative abundance of four sport fish taxa in the Flathead River.