

Status and Implications of tamarisk beetle (*Diorhabda carinulata*) along the Colorado River in Glen and Grand Canyons

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Tamarisk is a dominant woody riparian species found along the riparian corridor of the Colorado River in Glen Canyon National Recreation Area and Grand Canyon National Park. Though the species is exotic, it provides habitat to riparian breeding birds, including the southwestern willow flycatcher (*Empidonax traillii extimus*), and is a source of shade for recreational rafters along the river. The southward expansion of the biocontrol agent (*Diorhabda carinulata*), a leaf eating beetle specific to tamarisk, into this stretch of the Colorado River has implications for nesting success of breeding birds and plant community dynamics. To begin to assess the effect of the tamarisk beetle on the riparian community in Glen and Grand Canyons, Northern Arizona University in cooperation with Grand Canyon National Park and the USGS initiated four sampling trips to sample beetle distribution along the Colorado River in 2010. The sampling effort included deploying hobo temperature probes to collect baseline temperature and relative humidity data associated with breeding bird habitat along the river corridor prior to extensive defoliation. Reports of the beetle's distribution in September 2009 indicated a presence eight miles downstream of Lees Ferry as well as at site along the north rim of Grand Canyon. By mid-July of 2010, our sampling efforts identified early and late stages of larvae and adult tamarisk leaf beetles at several locations between Lees Ferry and 188 miles downstream. The early, late, and adult stages of tamarisk beetle were most abundant at Kanab Creek (river mile 144). Defoliation of tamarisk occurred by September of 2010. The multiple tributaries entering the Colorado River in Grand Canyon and the recreational boating that takes place in the summer months may expedite southward expansion of the tamarisk beetle into the lower Colorado River and its tributaries. We will discuss the status of beetles in Glen and Grand Canyons and implications of the spread and timing of defoliation on breeding bird habitat and related ecosystem functions.