

Adopt – A – Beach:
Long-Term Monitoring of Camping Beaches in Grand Canyon
Summary of Monitoring Observations for Year 2011

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Abstract

For the past sixteen years, the Adopt-A-Beach repeat photography program has been monitoring beaches along the Colorado River through Grand Canyon. Through comparative examination of photo series and on-the-spot observations contributed by the volunteer photographers, campsite conditions are evaluated. Factors considered which contribute to changes, both positive and negative, include: fluctuating river flows, aeolian action, vegetation increase/decrease, human introduced change, rain associated erosion or other actions, natural or anthropomorphic, that may have an effect on the camp. The resulting evaluations are also segregated and examined dependent upon which of the four primary river reaches in which the beach resides.

For the time spanning the 2011 summer boating season, early April to mid-November, 37 of the 44 study beaches in the program had photographs and photographer comment sheets spanning a sufficient period of time to be evaluated. Of these 37 beaches, 27% were classified as Unchanged for the time period, 41% had Improved through the summer and 32% were considered as Degraded by the end of the season. Of the Unchanged beaches, 40% are located in the Marble Canyon reach, 30% in the Upper Granite Gorge reach, another 20% are contained in the Muav Gorge reach and one, or 10%, is in the Lower Granite Gorge. Twenty percent of the Improved beaches are located in the Marble Canyon reach, another 33% in the Upper Granite Gorge and 47% are found in the Muav Gorge reach. Neither of the two beaches included in the study this year and located in the Lower Granite Gorge were considered to have improved. For the beaches classified as Degraded for this time period, 25% are from the Marble Canyon reach, 42% are found in the Upper Granite Gorge, 25% in the Muav Gorge reach and one, or 8% was located in the Lower Granite Gorge reach. The primary factor cited as creating an Improved camp is an increase of sand on the beachfront, enlarging the beach and creating more favorable parking for boaters. This is attributed to deposition from river transported sediment or sand being moved downslope and forward to the beach- front by the extended flows in excess of 20K cfs through much of the season. An addition of sediment during September tributary inflows may also have been a factor. Beach- front erosion and severe cutbanks as a result of the higher seasonal flows are the most readily evident cause of Degradation. Another factor cited was vegetation increase/encroachment.

A comparison between the late 2011 and pre-Beach-Habitat Building Flow (BHBF) of 1996 beach conditions was conducted to evaluate the relative conditions and possible factors for change over the past sixteen years. Of the 34 beaches considered in this portion of the analysis, 35% of the beaches were classified Unchanged, 18% are considered to be Degraded relative to the 1996 images, and 47% are Improved.

The following proportions were recorded per reach for these beaches. In the Marble Gorge, 43% were classified as Unchanged and 57% were recorded as being Improved compared to their 1996 pre-BHBF event conditions. None had degraded beyond the first image condition recorded by the study. Only seven of the eleven beaches currently being monitored in this reach were photographed during that first event. In the Upper Granite Gorge reach, 46% appeared to be the Same as in 1996, only two of the thirteen beaches considered, or 15% in this reach were classified as Degraded and 38% have an Improved appearance. Twentyone percent of the beaches located in the Muav Gorge reach currently have a Same classification, 29% are considered Degraded compared to the 1996 images and a strong 50% are recorded as Improved.

Most of the beaches considered as Improved when compared to the pre-BHBF are cited as having an expanded camp area and sand increase in general. Those beaches classified as having a more Degraded appearance in 2011 were largely impacted by vegetation increases and, to a lesser extent, loss of beach front from river flow erosion.

Since the 1996 BHBF, a primary concern of researchers has been the longevity of conditions for those beaches. Thirty three of the Adopt-A-Beach camps photographed in 2011 were available for comparison to the post-BHBF mid-season photographs acquired in 1996. Of these, 32% were considered to be about the Same condition now as in 1996, 21% were classified as remaining Improved since the BHBF and 47% have Degraded beyond their post BHBF condition.

When divided into their respective reaches, 50% of the beaches located in Marble Canyon were classified as Same and 50% were considered as Degraded. No beach located in this reach was considered to be Improved when compared to the 1996 images. Twenty-three percent of the beaches in the Upper Granite Gorge reach were classified as Same or Unchanged when compared to the 1996 photos, 62% received a Degraded classification and 15% of the beaches are considered as having improved since the 1996 BHBF. In the Muav Gorge reach 31% received a Same as 1996 designation, 31% have Degraded and 38% have Improved since the 1996 event. None of the beaches currently being studied in the Lower Granite Gorge was photographed in 1996.

For those beaches rated as Improved when compared to the post BHBF images, most had a greater camping area available at the end of 2011, particularly toward the rear of the camp area. This can possibly be attributed to sediment deposition from subsequent High Flow Experiments and reworking of the sand by wind action. The most predominant cause sited for a Degradation classification was a marked increase in vegetation, both surrounding the camp area and in the interior areas. Erosion of beach fronts from the recent seasonal flow regime also factored into many of the Degradation ratings.

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