Javan Rhino Survey Using Video Traps

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Photos: Ujung Kulon NP Authority – WWF Indonesia

Rhino Population Survey 2010

In April 2010, the Directorate General of Forest Protection and Nature Conservation (PHKA) within Indonesian Ministry of Forestry received 75 Bushnell Video traps as a donation from the Aspinall Foundation. Fifty of these were sent to Ujung Kulon National Park to complement existing video traps made available through support from the Asian Rhino Project (ARP) and the International Rhino Foundation (IRF). In order to ensure optimal use of the new equipment in the field a team consisting of Ujung Kulon National Park rangers, WWF field staff, and local people conducted field tests to determine the sensitivity of the Bushnell cameras to animal movements in the forest, and their durability in humid forest conditions. All tests produced satisfactory results, leading to the plan to use the new video traps along with the previous in the next official Javan rhino survey in Ujung Kulon National Park.

The Rhino survey in 2010 was the first attempt to use video cameras (60) for official estimates of Javan rhino populations, after more than twenty years of using the footprint/track count method. Unlike the footprint count, relying on transects to collect the data, the video trap survey used 1 km2 grids for each camera location. Experts from Bogor Agriculture University (IPB) were involved in designing the survey method to ensure validity of the video traps for a rhino survey conducted in a short time (approximately one month of camera placement in the field). Mark-recapture analysis that required a long period of video trap survey was modified to accommodate a significantly shorter observation period, so a stratified sampling method was implemented. This method divided the rhino habitat in the peninsula of Ujung Kulon National Park into areas with low, medium, and high density of rhino inhabitation. These stratifications were determined using records obtained in the last 5 years of rhino presence (footprint, faeces, sightings/camera trap data, wallow holes, feeding grounds, etc); camera locations were then based on this information. The numbers of cameras were determined according to the levels of rhino density in each area, i.e. areas with lower densities of rhino presence received fewer video traps than the medium and high density areas. Each of the thirteen teams was assigned trips to install and to retrieve the video traps from the field.

Unexpected Findings

During the trip to install the video traps, one unit encountered the skeleton of a dead rhinoceros in one of the northern grids (Nyiur block). Based on the condition of the skeleton, it was estimated that the demise of this adult male rhino occurred approximately three months before the finding. The position of the skeleton suggested that this male rhino had not died as a result of poaching, but also that the death may not have been due to old age. Further investigations and observations made by a team of veterinarian

An adult male rhino (tagged as no 20) showing prominent rib marks on its left side, as captured using video trap. Other than the visible rib marks, there are no other unusual behaviours exhibited by this individual.

An adult male (tagged as no 16) that shared wallows with another rhino and showed excess salivation in one of the video clip data. Another rhino that shared the wallow hole (tagged as no 19) also showed excess salivation in one of the video clips.

suspected that the death was quick, and occurred while the animal was walking toward a water source (a small creek) along the path. Based on all facts from the site, some possible causes of death were compiled. To everyone's surprise, a second skeleton of an adult male rhino was found in one of the southern grids (Cikeusik block). Unlike the first, the location of the second finding was in a small creek, causing some bones to have drifted downstream, possibly during heavy rain. Since the southern grids (including the Cikeusik block) contain the highest density of rhino populations, a thorough investigation was needed to determine the cause of death in order to prevent more deaths in this key rhino population area.

A part of the investigation was the use of previous video trap data to track the video clips containing the animals prior to their deaths. This information was expected to reveal anything unusual about these rhinos that might help narrow down (or even determine) the most likely cause of death. Some video clips show mildly skinny individuals (with prominent ribs), and two rhinos showing excess salivation or hypersalivation. These types of observations allow the use of video trap surveys to be extended for detecting clinical signs for assessing the health of rhinoceros within the population.

An adult male inhabiting the northern blocks of Ujung Kulon peninsula recorded in a small wallow hole.

Update on Rhinos in Sabah, Malaysia, And the Work of Borneo Rhino Alliance

Borneo Rhino Alliance (BORA; www.borneorhinoalliance.org), formerly SOS Rhino Borneo, a non-governmental organization (NGO) established as a not-for-profit company, continues to work with the government authorities and WWF in Sabah, Malaysia, in a last ditch effort to save the Bornean form of the Sumatran rhino from extinction.

Estimated at less than 40 remaining individuals, with only a small proportion being breeding females, BORA and the government of Sabah now consider that just patrolling to protect remaining wild rhinos is unlikely to be sufficient to save the species in Borneo.

Key remaining rhino habitats at Tabin Wildlife Reserve (1,200km2) and Danum Valley Conservation Area (438 km2), both established in the 1980s, and with protection patrols active for most of the time over the past decade, have not seen a clear increase in rhino numbers.

In fact, rhino numbers seem to have stagnated and probably declined overall, an indication of a phenomenon known as the Allee effect.

Tam in his interim forest paddock at Tabin Wildlife Reserve, Sabah.

As numbers of individuals of a species decline to a very low level, the various factors associated with very low numbers (such as narrow genetic base, locally skewed sex ratio, difficulty in finding a fertile mate, reproductive pathology associated with long non-reproductive periods) conspire to drive numbers even lower, to the extent that death rate eventually exceeds birth rate, even with adequate habitat and zero poaching.