**Rapid conservation assessment for endangered species using habitat connectivity models**

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**APPENDIX 1**

**Landcover mapping methods**

Land cover mapping in this region has been limited in the past because of persistent cloud cover. We assembled recent virtually cloud-free imagery for the northern range including two 15-m resolution Aster images from September 2010 and June 2012, as well as a 30-m Landsat 8 image from April 2013 and two 30-m Landsat 5 images from September and December 1987 (Table S1). Use of imagery from different months presents less of a concern for this region, which has little seasonality. All images were orthorectified to a 90-m elevation dataset (Jarvis 2006), and radiometrically corrected using the FLAASH module in ENVI 5.0 (Exelis Visual Information Solutions 2012). Landsat images were resampled to 15-m resolution to match the Aster imagery.

Multiple approaches for classification were tested (unsupervised, maximum likelihood, object-oriented), however accuracy assessment with field data proved the unsupervised ISODATA algorithm to be the most successful. We produced initial unsupervised classifications with 100 classes, which were combined into 8 land cover types after extensive interpretation. Along with visible and near-infrared bands, elevation, slope and aspect were included in the classification. Separate image classifications were combined into a comprehensive map of the northern range. Much of the region was deforested in the early 1980s; therefore, we integrated classifications of historic Landsat 5 imagery to delineate secondary forests. Finally, a majority filter was applied to remove isolated pixels.

We evaluated the final land cover map using 332 validation points. We visited 259 field locations in the northern range during May 2013, and recorded plot centers using a handheld Garmin GPS60. We opportunistically selected plots at least 30m from traversable roads, where homogenous land cover of at least 900m2 was present. Land cover types documented included primary forest, secondary forest, early successional forest, mixed native trees and fruit crops, non-forested, or urban. Of the field locations, 163 points were retained for accuracy assessment. To achieve an equal number for each land cover class, we incorporated 169 random points from cloud-free high resolution imagery in GoogleEarth for dates ranging from 2009 to 2013.

**Table S1** Satellite imagery sources used to classify land cover in the northern range of the San Martín titi monkey.

|  |  |  |  |
| --- | --- | --- | --- |
| ***Sensor*** | ***Acquisition date*** | ***Scene ID*** | ***Spatial Resolution (m)*** |
| Aster | September 11, 2010 | AST\_L1A\_00309112010153247 | 15 |
| Aster | June 12, 2012 | AST\_L1A\_00306122012153240 | 15 |
| Landsat 5 | September 11, 1987 | LT50090641987254XXX02 | 30 |
| Landsat 5 | December 17, 1987 | LT40080641987351XXX03 | 30 |
| Landsat OLI | April 20, 2013 | LC80080642013110LGN01 | 30 |