cover and built area, may have with the abundance of mosquito larval habitats and the *Aedes aegypti* container index in an urban area of Costa Rica. Two cross-sectional entomological field surveys were performed in the city of Puntarenas during the wet season of 2006 and the dry season of 2007. A geographical sampling method was used to select the areas to be surveyed: a grid (100 by 100 meters) was constructed and a stratified random sample of 34 cells (10%) was selected. All possible larval habitats were noted per cell, and mosquito larvae were identified. Two seasonal land cover maps were prepared using QuickBird multispectral imagery (2.4 m spatial resolution) with "water", "built", "tree", "grass/bare soil", and "paved" classes. The proportion of tree cover and built area was extracted for each of the cells, and regression models were analyzed for the number of larval habitats, *Ae. aegypti* container index, and pupae per person. In the wet season and when corrected by the number of locations evaluated in each cell, tree cover ($R^2 = 0.650$, $p<0.001$) and built area ($R^2 = 0.613$, $p<0.001$) were able to significantly explain the variation in total larval habitats. Larval habitats were positively associated with tree cover and negatively associated with built area, while the proportion of *Ae. aegypti* positive containers was negatively associated with tree cover. The significant regression models were used to create maps of larval habitat abundance in Puntarenas at the cell level. Results showed that the abundance of mosquito habitats in urban environments may be explained and predicted by using remotely sensed information. Areas within the urban environment with greater tree cover probably contain numerous *Ae. aegypti* and other mosquito larval habitats in the wet season and should be targeted for more efficient vector control.

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SURPRISES IN THE CLIMATE-MALARIA LINK IN THE AMAZON

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Global climatic changes are altering patterns of temperature and precipitation, potentially affecting regions of malaria transmission. Links between changing precipitation and malaria, however, are not well understood, although previous studies have made general predictions of increasing malaria with increasing precipitation. Here we find that the relationship between precipitation and malaria can change sign, depending on the underlying landscape: regions with few wetlands show a positive relationship between precipitation and malaria, while areas of high wetlands show a negative relationship. This result shows that the links between climate and malaria are more complex than previously believed, and must take into account regional ecological characteristics.

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EVALUATION OF A PCR-RFLP METHOD FOR IDENTIFICATION OF ANOPHELINE SPECIES FROM THE PACIFIC AND ATLANTIC COASTS OF COLOMBIA

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Many of the primary malaria vectors belong to complexes or groups which include several species with differences in their capacity to transmit malaria. Since their identification is complicated by cryptic morphology, the use of molecular methods may provide accurate identification of those species implicated in malaria transmission. We evaluated the applicability of an ITS2 based PCR-RFLP assay previously developed by our group, for accurate identification of anopheline species in two Colombian regions: the Pacific and the Atlantic Coast. We analyzed 203 specimens corresponding to four of the seven species included in the assay, which were identified using morphological characters: *Anopheles albimanus* (168/9575)*, Anopheles darlingi* (1/1)*, Anopheles rangeli* (6/6)*, Anopheles punctimacula* (6/6) and *Anopheles triannulatus* (22/1967)*.* The PCR-RFLP confirmed the identity of individual specimens of *An. albimanus, An. darlingi, An. punctimacula* and *An. triannulatus*, and helped to correct the species assignment of six specimens previously identified as *An. nuneztovari* to *An. rangeli*. Our results showed conserved restriction patterns for three of the species analyzed in both regions. Some *An. albimanus* specimens showed a 15bp difference in one restriction fragment caused by a mutation in one of the recognition sites of the enzyme; however, the pattern could still be easily assigned to *An. albimanus*. Therefore, this ITS2 PCR-RFLP proved to be a valuable assay for the accurate identification of anophelines in these two Colombian regions, which is essential for guiding vector control strategies.

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EVALUATING THE IMPACT OF ENVIRONMENTAL VARIABLES ON THE TRANSMISSION OF AMERICA CUTANEOUS LEISHMANIASIS IN RURAL COLOMBIA

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A large outbreak of American cutaneous leishmaniasis started in 2004 in the Municipality of Chaparral (Tolima, Colombia). The population was 46,090 in year 2005, and is divided between 142 *veredas* (townships or districts). The range was restricted between 1000 and 2000 m of elevation. Within this range, the *vereda*-level cumulative incidence of clinical cases ranged from 1 to 95%. In order to understand the environmental conditions favoring the outbreak, we studied climatic, coverage and topographic variables. These included elevation, coverage obtained from a supervised classification of Landsat and Aster satellite images (forest, shrubs, cultivation, pasture, and urban), and fourteen bioclimatic variables (www.worldclim.org). The spatial analysis was done at *vereda* level. The peak incidence of the disease was estimated to occur at a mean temperature of 20.6°C (95% CI 19.2-22.0°C). We found no significant changes in vegetation coverage, based on satellite images from 1989, 2002 and 2007; a period that includes the time of the outbreak. The coverage with forest or shrubs was associated with the disease, with incidence being 29% higher for each 10% increase in these types of vegetation.

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SPATIAL DISTRIBUTION OF MOSQUITO LARVAE AND THE POTENTIAL FOR TARGETED LARVAL CONTROL IN THE GAMBIA

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There is a growing interest in the scientific community for use of larval control as a tool for integrated vector management. Here the distribution of the aquatic stages of malaria vectors in rural Gambia was examined to assess the practicality of targeting larval control. Every accessible water body in a 400 km^2 area in rural Gambia was mapped and sampled for two consecutive years. Each water body was characterised by its distance to the edge of the alluvial plains, perimeter, habitat type, landcover type and the presence or absence of mosquito larvae assessed by standard dipping. Sampling was continuous in each site through the rainy and dry

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