69.81%), locality (9.08%; range, 0.00-28.64%), age (2.16%; range, 0.00-6.79%), and sex (0.61%; range, 0.00-5.08%). Locality, sex, and age generally accounted for less than 10% of the variation among the total character set, although locality was responsible for 28.64% of the variation in TAL, 22.22% for PDB, and 16.55% for BAM, and age accounted for 15-10% of the variation in ZB.

The univariate and variance components analyses revealed little variation in *P. simulus* associated with either sex or age. In the variance components analysis, sex and age accounted for an average of only 0.61% and 2.16% of the variation associated with each character, respectively, and residual effects accounted for an average of more than 30 times the variation than did either sex or age. For these reasons, males and females, as well as individuals in age classes IV, V and VI, were combined for the purpose of assessing geographic variation. These data are typical for other taxa in the *P. boylii* species group, such as *P. beatae*, *P. boylii rowleyi*, *P. levipes levipes*, and *P. levipes ambiguus*, which also reveal small amounts of variation associated with either sex or age (Bradley et al., 1989, 1990; Schmidly et al., 1988). The coefficients of variation (CVs) for measurements of *P. simulus* (4.52 and 4.66 for samples 4 and 8, respectively) are comparable to similar data available for *P. eremicus* (4.75) and *P. pectoralis* (4.42), but considerably higher than the average CV for similar measurements (3.42) of *P. hooperi* (Schmidly et al., 1985).

Significant geographic variation was evident in 18 of 23 external and cranial measurements among the 12 samples (see Table 3). The most divergent specimens were those of sample 1 (*P. boylii rowleyi*) from near Picos, Sinaloa. This sample is separated by almost 200 km from the nearest samples of *P. simulus* to the south. In most measurements specimens from sample 1 were smaller in size compared to those of other samples, although a Duncan's multiple range mean test revealed statistical overlap between sample 1 and either sample 2 (Mazatlán, Sinaloa) or 12 (San Ignacio, Sinaloa) in many measurements. The largest mice were from two of the coastal samples of *P. simulus* (sample 6 from Teacapan, Sinaloa, and sample 11 from Las Varas, Nayarit).

All but five characters (BDL, LIF, LAB, LMF, and WMF) revealed statistical significant differences (ANOVA; $P < 0.05$) among localities. However, a Duncan's multiple range test on locality means revealed only two characters (HFl and LLW) with non-overlapping subsets. For HFL, sample 11 was significantly different from the other samples; and for LLW, sample 12 was significantly different. The remaining characters displayed overlapping subsets among populations, but a clear-cut geographic pattern was not evident. In the principal component analysis (PCA), the first component accounted for 43.18% of the phenetic variation; the second component, 14.53%; and the third component, 12.14% (Fig. 2). Component I revealed positive loadings for all characters (Table 2), reflecting size gradations among the samples. Component II had a positive loadings for all loadings for some measurements (LLW, LAB, PDB, and WMF), but negative loadings for others (LR, LN, and DB). This contrasting pattern, which is indicative of skull shape distinctions among the samples, also was evident for component III (LN, LMR, LMF, and LBP had a large positive loadings; LIF and RB had a large negative loadings).