**Introduction**

The genus *Donax* is worldwide distributed and numerically dominates sandy beaches [1]. The taxonomy of *Donax* is controversially discussed [2]. One of the reasons is the high variability in shape, size and color. The same holds true for the two Pacific American *D. marincovichi* and *D. obesulus* (Fig. 1). At ten different Chilean and Peruvian exposed sandy beaches (Fig. 2) both species were collected.

Kruskal-Wallis test showed a high significant difference between width/height as well as height/length ratio between populations (p<0.001). The shells from the upper north of Peru are higher and shorter indicating a compact shape than clams from the other sites (Fig. 1). The comparison of single beach samples revealed a difference between beach 10 and 4, 5 and 6 (p<0.001). All other comparisons did not show any significant results (p>0.05).

Results

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Discussion

The morphological comparison reveals significant difference in shell shape between upper northern of Peruvian (10) populations and populations south of Lima (beach 2 and 3). As [4] reported morphological plasticity may already appear in juvenile stages resulting from a directional selection [5]. Future studies should therefore take beach profiles and predator abundance into account. Exclusive morphometric comparison seems not to be sufficient to explain intraspecific shell variations and to confirm the genetic study. Sperm morphology, which delivers good possibilities for taxonomic investigations [3] will be carried out to confirm the genetic results.

Material and Methods

From 10 beaches (Fig. 2) 11 clams were collected and shells measured with a digital caliper (±0.01mm) for length (anterior-posterior), height (ventro-dorsal) and width (left-right) (Fig. 4). Height/length (W/L) and width/height (W/H) relations were calculated and the nonparametric Kruskal-Wallis applied. Significant morphological differences between populations from distinct beaches were proven by Dunn test.

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Acknowledgments

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References