Genus	Vol. 8 (3-4): 765-795	Wrocław, 15 XII 1997

Shell variation in some populations of *Trichia hispida* (L.) from Poland (*Gastropoda: Pulmonata: Helicidae*)

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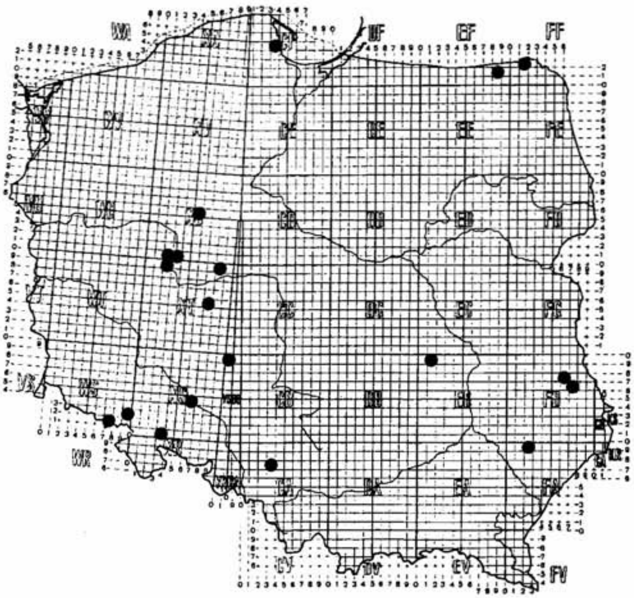
ABSTRACT. Twenty one populations of *Trichia hispida* from various localities in Poland were analysed biometrically with respect to 13 shell characters. Almost each of them differs statistically significantly from the remaining populations in at least one character (shell size, proportions, number of whorls). The least variable characters are: aperture height and breadth, relative height of body whorl and umbilicus relative diameter. The shell proportions, expressed as height/breadth ratio, are correlated with longitude - the more eastwards the locality is situated, the more flat the shell. The growth of juvenile snails is allometric only in some populations; in others it is isometric. Besides the age, the degree of shell "hairiness" depends also on some other factor(s).

Key words: malacology, *Gastropoda, Trichia hispida*, biometrics, shell, geographic variation.

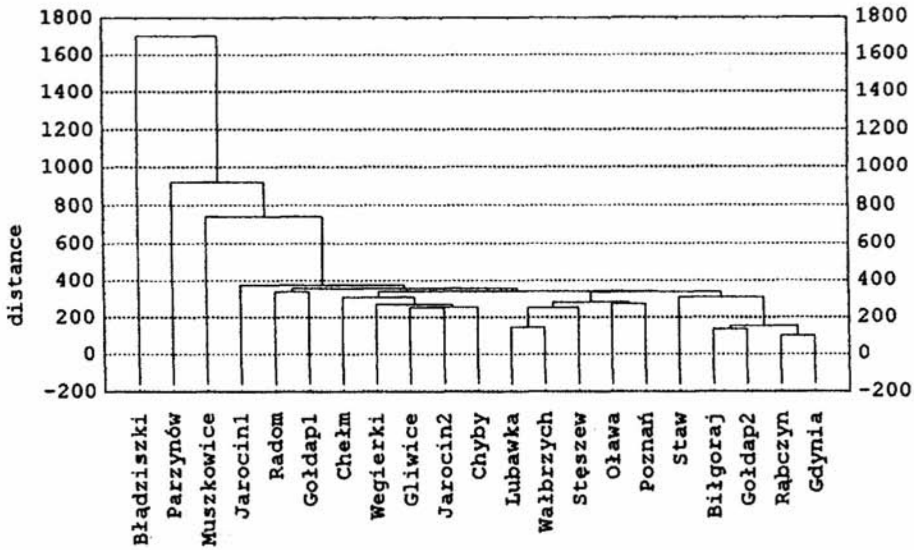
INTRODUCTION

The genus *Trichia*, distributed in Central and Eastern Europe (SHILEYKO 1978), includes 21 nominal species. Most of them are much variable which makes both revisions and identifications difficult (FORCART 1965). Seven or eight species occur in Poland (RIEDEL 1988), *T. hispida* being the most common. In the literature prior to 1965 the name *T. hispida* was applied to two, morphologically very close, species: *T. hispida* distributed more to the north, and *T. concinna* (JEFFREYS, 1830) of a more southern distribution range.

Data on the Polish members of the genus *Trichia* pertain only to the distribution of particular species, and are very incomplete (POLIŃSKI 1918, 1924, RIEDEL 1988).

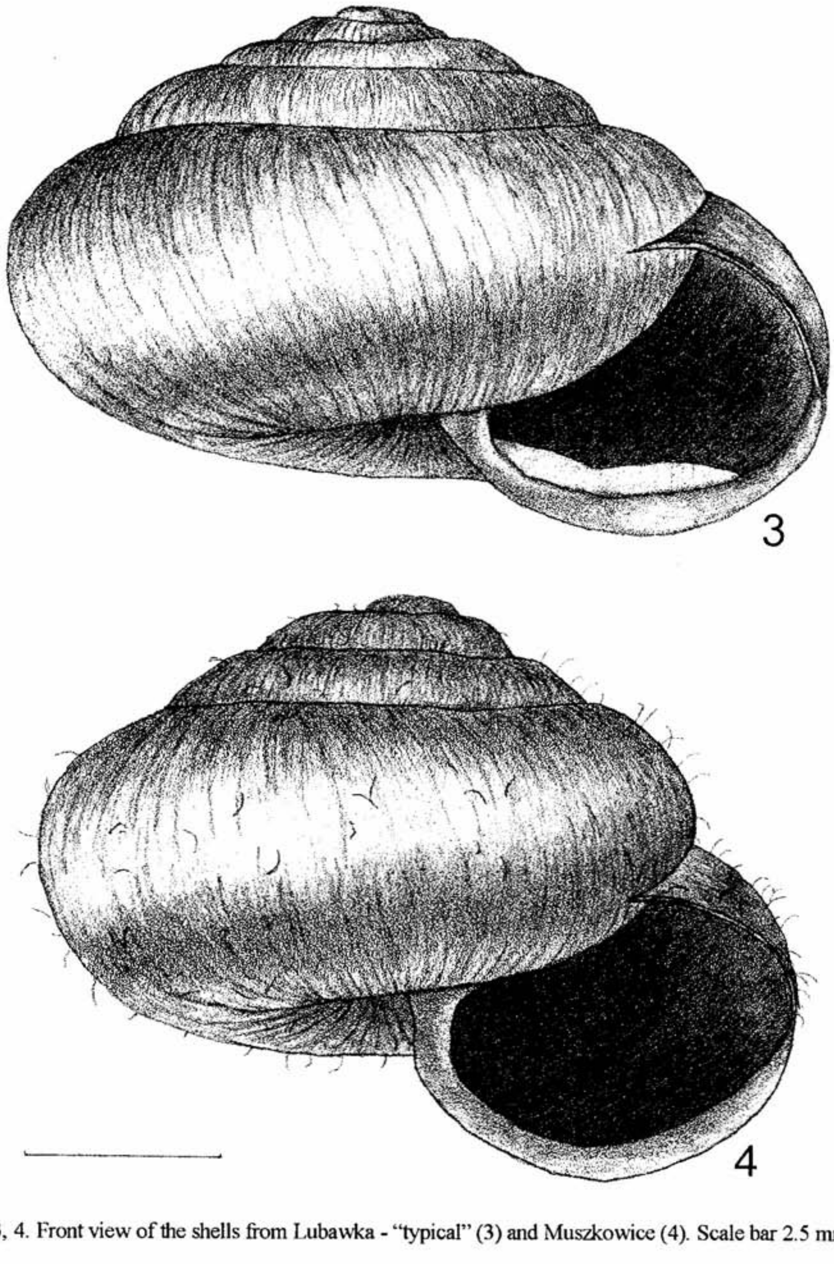


1. Distribution of the studied populations: 1 - Lubawka (WS 71), 2 -Wałbrzych (WS 92), 3 - Stęszew (XT 19), 4 - Chyby (XU 10), 5 - Poznań (XU 20), 6 - Muszkowice (XS 03), 7 - Oława (XS 64), 8 - Rąbczyn (XU 55), 9 - Jarocin1 (XT 75), 10 - Jarocin2 (XT 75), 11 - Węgierki (XT 89), 12 - Parzynów (YS 09), 13 - Gdynia (CF 34), 14 - Gliwice (CA 37), 15 - Radom (EB 19), 16 - Gołdap1 (EF 81), 17 - Gołdap2 (EF 81), 18 - Błądziszki (FF 02), 19 - Biłgoraj (FA 29), 20 - Staw (FB 67), 21 - Chełm (FB 76).



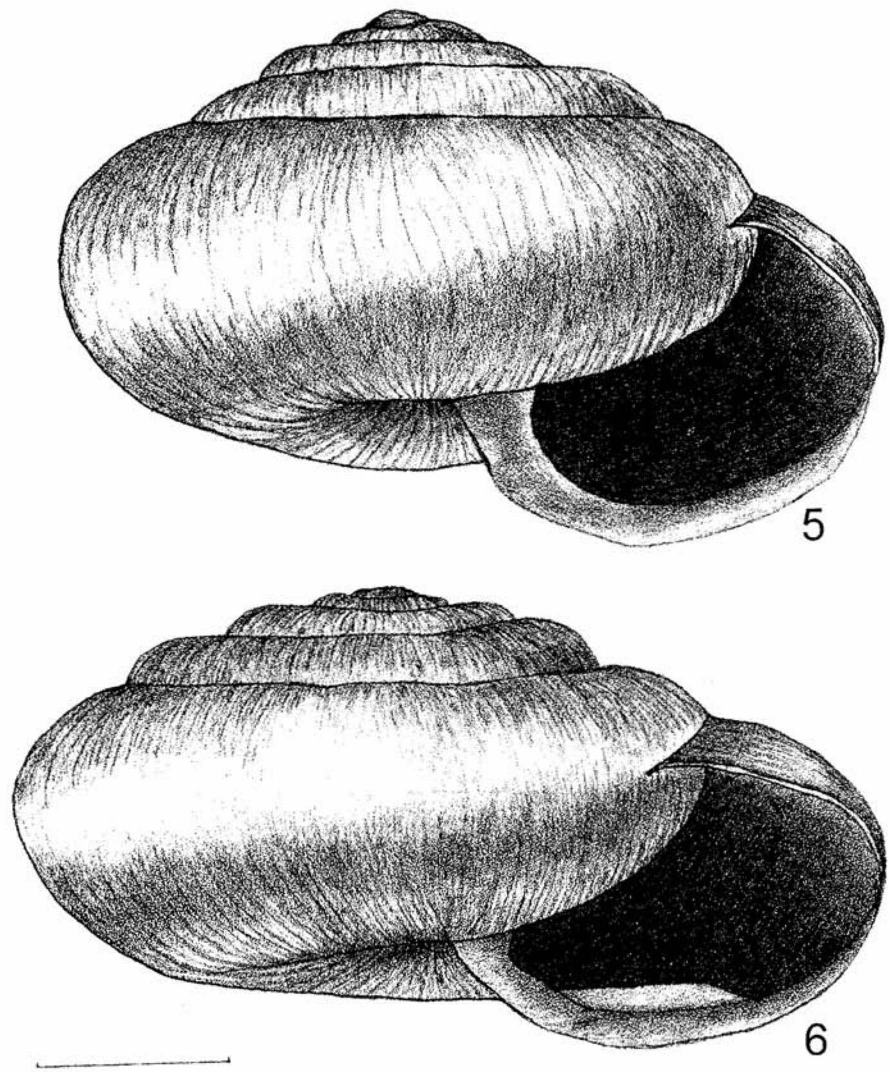
2. Similarity dendrogram based on mean values of shell parameters of the studied populations.

The genus has not been revised hitherto; inter- and intrapopulation ranges of shell variability have not been studied in any of its members. General data on the shell structure and reproductive system in *T. hispida* and several other European species were presented by POLIŃSKI (1924), FORCART (1965) and SHILEYKO (1978).



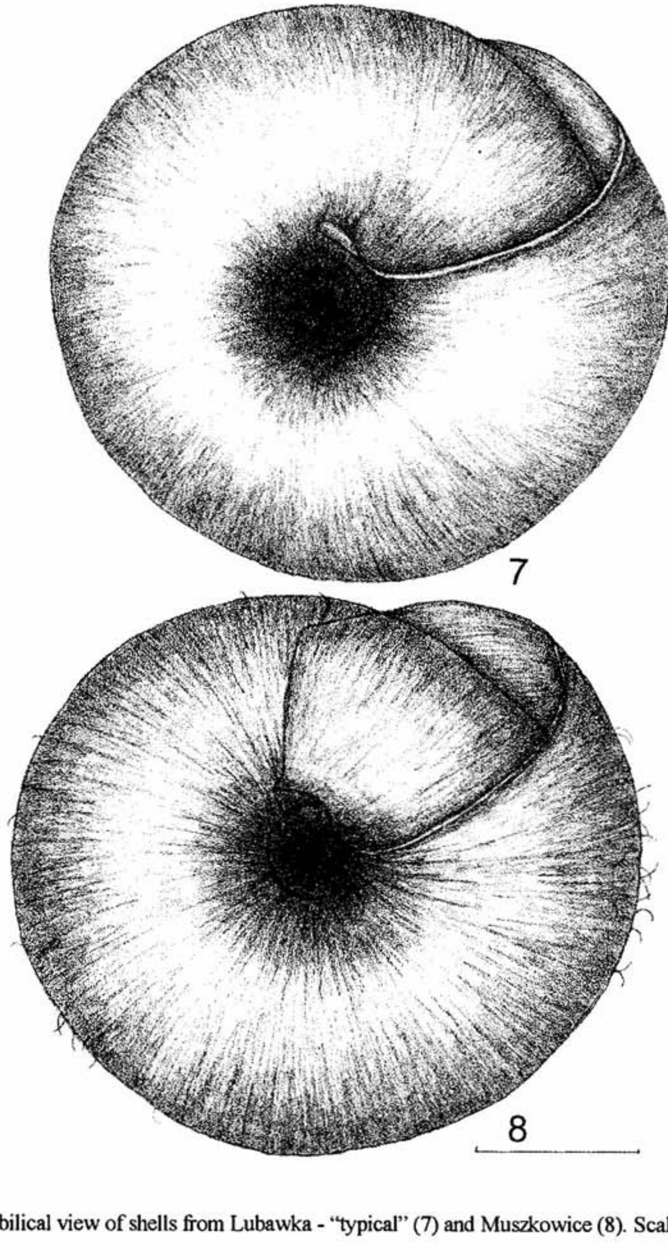
3, 4. Front view of the shells from Lubawka - "typical" (3) and Muszkowice (4). Scale bar 2.5 mm

The aim of this work was a detailed examination of geographic and individual shell variability in the most common Central European species - *T. hispida*. Such studies might reveal characters of low variation and thus possibly diagnostically useful.

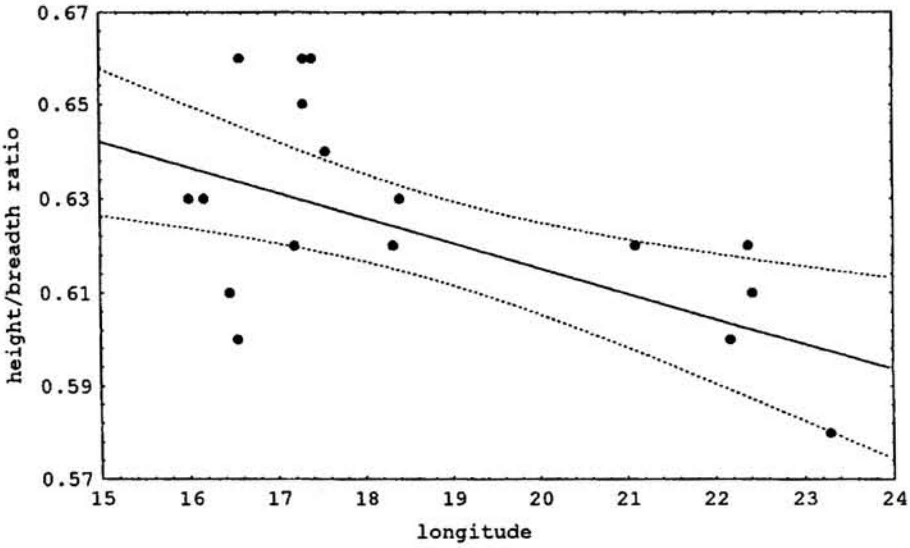


5, 6. Front view of the shells from Parzynów (5) and Gołdap (6). Scale bar 2.5 mm

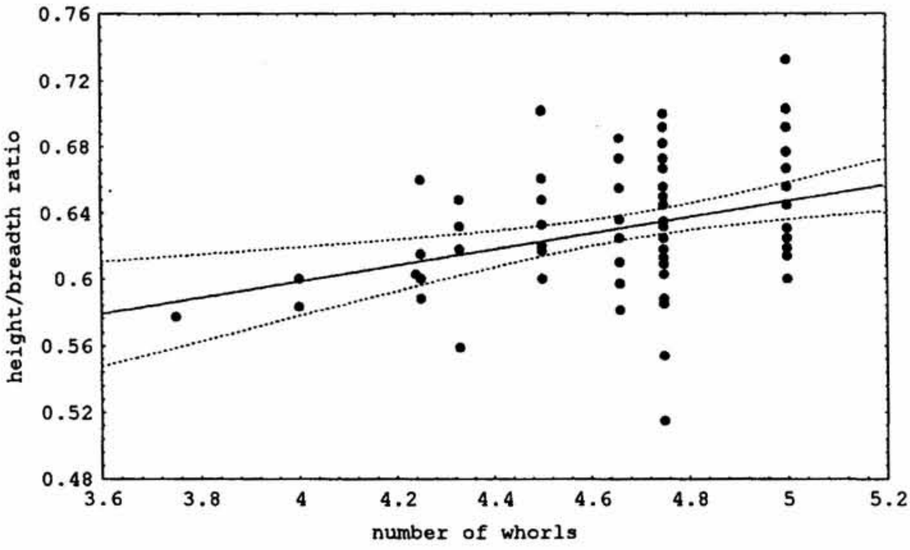
T. hispida inhabits a considerable part of Europe, except its southern parts and westernmost fringes, where it is replaced by *T. concinna* (FORCART 1965); in the north it exceeds the Arctic Circle along the Atlatic coast of Scandinavia and in the east it reaches the Ural Mts (SHILEYKO 1978, RIEDEL 1988). In Poland it occurs in the whole



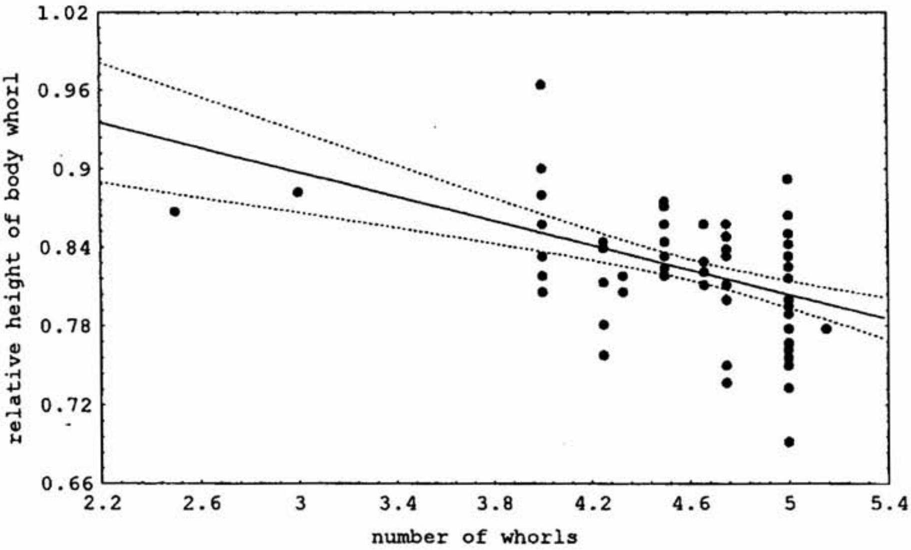
7, 8. Umbilical view of shells from Lubawka - "typical" (7) and Muszkowice (8). Scale bar 2.5 mm.



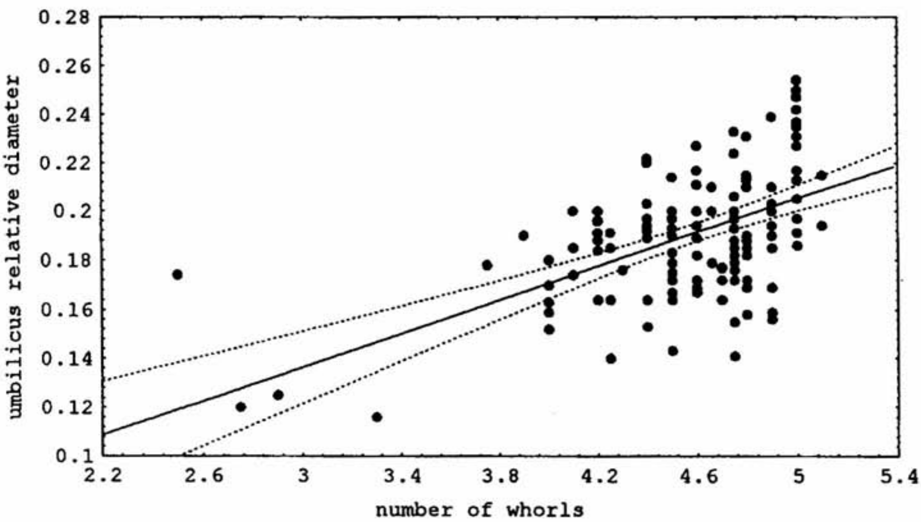
9. Mean adult height/breadth ratio plotted against longitude of the localities.
y=0.723-0.005X, r=-0.612, df=19, P=0.003



10. Height/breadth ratio plotted against the number of whorls. Population from Węgierki.
y=0.403+0.049x, r=0.357, df=84, P<0.001



11. Relative height of body whorl plotted against the number of whorls. Population from Jarocin 2. $y=1.038-0.047x$, $r=-0.463$, $P<0.001$



12. Umbilicus relative diameter plotted against the number of whorls. Population from Gliwice. $y=0.033+0.034x$, $r=0.540$, $df=138$, $P<0.001$

Table 1. Interpopulation variability of *Trichia hispida* in Poland.

No.	Locality	Shell height A.Mean B.SD C.NS D.Range E. v	Shell breadth A.Mean B.SD C.NS D.Range E. v	Aperture height A.Mean B.SD C.NS D.Range E. v	Aperture breadth A.Mean B.SD C.NS D.Range E. v	Body whorl height A.Mean B.SD C.NS D.Range E. v	Shell diameter A.Mean B.SD C.NS D.Range E. v	Umbilicus major diameter A.Mean B.SD C.NS D.Range E. v	Umbilicus minor diameter A.Mean B.SD C.NS D.Range E. v	Whorl number A.Mean B.SD C.NS D.Range E. v	Height/breadth ratio A.Mean B.SD C.NS D.Range E. v	Ratio of umbilicus major diameter to shell diameter A.Mean B.SD C.NS D.Range E. v	Ratio of umbilicus minor diameter to its major diameter A.Mean B.SD C.NS D.Range E. v	Relative height of body whorl A.Mean B.SD C.NS D.Range E. v
1.	LUBAWKA	A.4.378 B.0.619 C.68 D.3.0-5.5 E.14.14	A.6.978 B.0.855 C.68 D.4.6-9.0 E.12.25	A.2.534 B.0.329 C.68 D.1.7-3.5 E.12.98	A.3.347 B.0.431 C.68 D.2.5-4.3 E.12.88	A.3.528 B.0.469 C.68 D.2.5-4.5 E.13.29	A.6.99 B.0.853 C.68 D.4.5-9.0 E.12.2	A.1.516 B.0.285 C.68 D.0.8-2.2 E.18.8	A.1.297 B.0.279 C.68 D.0.7-2.0 E.21.51	A.5.15 B.0.39 C.68 D.4.00-6.00 E.7.57	A.0.63 B. 0.040 C. 68 D.0.54-0.71 E.6.35	A.0.22 B.0.024 C.68 D.0.15-0.29 E.10.91	A.0.85 B.0.057 C.68 D.0.61-0.95 E.6.7	A.0.81 B.0.033 C.68 D.0.71-0.89 E.4.07
2.	WAŁ- BRZYCH	A.4.633 B.0.442 C.66 D.3.7-5.7 E.9.54	A.7.411 B.0.584 C.66 D.5.6-8.6 E.7.88	A.2.694 B.0.238 C.66 D.2.2-3.3 E.8.83	A.3.544 B.0.353 C.66 D.2.5-4.2 E.9.96	A.3.717 B.0.268 C.66 D.3.2-4.3 E.7.14	A.7.352 B.0.843 C.66 D.2.6-8.6 E.11.47	A.1.714 B.0.239 C.66 D.1.1-2.2 E.13.94	A.1.450 B.0.262 C.66 D.0.9-2.0 E.18.07	A.5.32 B.0.26 C.66 D.4.75-5.00 E.4.89	A.0.63 B.0.042 C.66 D.0.52-0.74 E.6.67	A.0.24 B.0.057 C.66 D.0.16-0.65 E.23.75	A.0.84 B.0.062 C.66 D.0.67-0.95 E.7.56	A.0.80 B.0.037 C.66 D.0.68-0.90 E.4.62
3.	STĘSZEW	A.3.958 B.0.93 C.110 D.1.7-5.6 E.23.5	A.6.537 B.1.488 C.110 D.3.0-8.7 E.22.76	A.2.439 B.0.475 C.110 D.1.3-3.4 E.19.47	A.3.273 B.0.763 C.110 D.1.5-5.0 E.23.31	A.3.222 B.0.671 C.110 D.1.6-4.4 E.20.82	A.6.575 B.1.494 C.110 D.3.1-9.0 E.22.72	A.1.405 B.0.378 C.110 D.0.6-2.0 E.26.9	A.1.158 B.0.341 C.110 D.0.5-1.8 E.29.45	A.4.89 B.0.71 C.110 D.3.00-5.75 E.14.52	A.0.60 B.0.038 C.110 D.0.52-0.72 E.6.33	A.0.21 B.0.024 C.110 D.0.13-0.27 E.11.43	A.0.82 B.0.085 C.110 D.0.61-1.00 E.10.36	A.0.82 B.0.053 C.110 D.0.67-0.96 E.6.46
4.	CHYBY	A.4.027 B.0.478 C.56 D.2.8-4.8 E.11.86	A.6.659 B.0.779 C.56 D.4.7-8.5 E.11.7	A.2.441 B.0.298 C.56 D.2.0-3.3 E.12.21	A.3.288 B.0.426 C.56 D.2.5-4.0 E.12.96	A.3.268 B.0.371 C.56 D.2.5-4.0 E.11.35	A.6.659 B.0.779 C.56 D.4.7-8.5 E.11.7	A.1.514 B.0.269 C.56 D.0.8-2.2 E.17.77	A.1.259 B.0.244 C.56 D.0.7-2.0 E.19.38	A.5.18 B.0.39 C.56 D.3.75-5.75 E.7.53	A.0.61 B.0.039 C.56 D.0.53-0.70 E.6.39	A.0.23 B.0.026 C.56 D.0.15-0.27 E.11.3	A.0.83 B.0.076 C.56 D.0.67-1.00 E.9.16	A.0.81 B.0.039 C.56 D.0.75-0.93 E.4.81
5.	POZNAŃ	A.4.347 B.0.656 C.58 D.2.6-5.5 E.15.09	A.7.238 B.1.026 C.58 D.4.5-9.0 E.14.17	A.2.490 B.0.323 C.58 D.1.8-3.2 E.12.97	A.3.448 B.0.528 C.58 D.2.3-4.5 E.15.31	A.3.505 B.0.462 C.58 D.2.3-4.4 E.13.18	A.7.090 B.1.237 C.58 D.1.8-8.8 E.17.44	A.1.609 B.0.353 C.58 D.0.9-2.3 E.21.94	A.1.376 B.0.345 C.58 D.0.8-2.1 E.25.07	A.5.36 B.0.50 C.58 D.3.75-6.00 E.9.33	A.0.60 B.0.041 C.58 D.0.51-0.68 E.6.83	A.0.23 B.0.029 C.58 D.0.16-0.90 E.12.61	A.0.85 B.0.076 C.58 D.0.65-1.00 E.9.94	A.0.81 B.0.039 C.58 D.0.73-0.90 E.4.81
6.	MUSZKO- WICE	A.4.511 B.0.672 C.62 D.2.7-6.0 E.15.46	A.6.861 B.0.869 C.62 D.4.9-8.3 E.12.66	A.2.713 B.0.430 C.62 D.2.0-3.7 E.15.85	A.3.313 B.0.804 C.62 D.2.1-7.5 E.24.27	A.3.813 B.0.595 C.62 D.2.2-5.0 E.15.6	A.6.806 B.0.940 C.62 D.4.4-8.5 E.13.81	A.0.734 B.0.182 C.62 D.0.4-1.2 E.24.8	A.0.695 B.0.155 C.62 D.0.4-1.0 E.22.3	A.4.96 B.0.35 C.62 D.4.00-5.75 E.7.06	A.0.66 B.0.048 C.62 D.0.55-0.79 E.7.27	A.0.11 B.0.017 C.62 D.0.07-0.16 E.15.43	A.0.96 B.0.070 C.62 D.0.78-1.00 E.7.29	A.0.85 B.0.046 C.62 D.0.75-0.94 E.5.41
7.	OŁAWA	A.3.490 B.0.807 C.242 D.1.7-5.6 E.17.89	A.5.644 B.1.262 C.242 D.3.0-8.9 E.22.36	A.2.180 B.0.415 C.242 D.1.2-3.3 E.19.04	A.2.719 B.0.602 C.242 D.1.3-4.3 E.22.14	A.2.864 B.0.613 C.242 D.1.6-4.5 E.21.4	A.5.634 B.1.254 C.242 D.3.1-9.0 E.22.26	A.1.273 B.0.368 C.242 D.0.6-2.5 E.28.91	A.1.092 B.0.350 C.242 D.0.5-2.3 E.32.05	A.4.62 B.0.55 C.242 D.3.00-6.00 E.11.9	A.0.62 B.0.043 C.242 D.0.1-0.83 E.6.93	A.0.22 B.0.030 C.242 D.0.14-0.31 E.13.64	A.0.85 B.0.07 C.242 D.0.63-1.00 E.8.23	A.0.82 B.0.041 C.242 D.0.71-0.94 E.5

Table 1 continued. Interpopulation variability of *Trichia hispida* in Poland.

8.	RĄBCZYN	A.4.297 B.0.541 C.60 D.2.9-5.5 E.12.59	A.7.012 B.0.755 C.60 D.5.0-8.8 E.10.77	A.2.532 B.0.255 C.60 D.1.9-3.0 E.10.07	A.3.343 B.0.381 C.60 D.2.3-4.2 E.11.4	A.3.463 B.0.376 C.60 D.2.5-4.0 E.10.86	A.6.993 B.0.769 C.60 D.5.0-8.8 E.11	A.1.623 B.0.257 C.60 D.1.0-2.2 E.15.7	A.1.365 B.0.258 C.60 D.0.8-2.0 E.18.9	A.5.25 B.0.30 C.60 D.4.33-5.75 E.5.71	A.0.61 B.0.043 C.60 D.0.53-0.75 E.7.05	A.0.23 B.0.021 C.60 D.0.18-0.29 E.9.13	A.0.84 B.0.072 C.60 D.0.67-1.00 E.8.57	A.0.81 B.0.042 C.60 D.0.70-0.90 E.5.18
9.	JAROCIN 1	A.4.354 B.0.702 C.120 D.1.9-5.8 E.16.12	A.6.646 B.1.017 C.120 D.3.0-8.5 E.15.3	A.2.610 B.0.350 C.120 D.1.0-3.4 E.13.41	A.3.316 B.0.521 C.120 D.1.5-4.3 E.15.71	A.3.473 B.0.476 C.120 D.1.5-4.4 E.13.7	A.6.66 B.1.020 C.120 D.3.0-8.4 E.15.31	A.1.391 B.0.312 C.120 D.0.4-2.2 E.22.43	A.1.153 B.0.253 C.120 D.0.3-2.0 E.21.94	A.5.15 B.0.51 C.120 D.3.00-6.00 E.9.9	A.0.65 B.0.043 C.120 D.0.53-0.78 E.6.61	A.0.21 B.0.026 C.120 D.0.13-0.31 E.12.38	A.0.83 B.0.070 C.120 D.0.65-1.00 E.8.43	A.0.80 B.0.047 C.120 D.0.61-1.00 E.5.87
10.	JAROCIN 2	A.4.073 B.0.662 C.179 D.1.5-5.7 E.16.25	A.6.264 B.0.986 C.179 D.2.2-9.0 E.15.74	A.2.419 B.0.306 C.179 D.1.1-3.2 E.12.65	A.3.152 B.0.470 C.179 D.1.2-4.1 E.14.91	A.3.255 B.0.455 C.179 D.1.3-4.3 E.13.98	A.6.247 B.0.967 C.179 D.2.3-8.7 E.15.48	A.1.440 B.0.304 C.179 D.0.3-2.0 E.21.11	A.1.160 B.0.263 C.179 D.0.2-1.7 E.22.67	A.5.00 B.0.51 C.179 D.2.5-5.75 E.10.2	A.0.65 B.0.034 C.179 D.0.56-0.77 E.5.23	A.0.23 B.0.025 C.179 D.0.13-0.29 E.17.87	A.0.80 B.0.071 C.179 D.0.64-1.00 E.8.87	A.0.80 B.0.042 C.179 D.0.67-0.96 E.5.25
11.	WĘGIERKI	A.3.888 B.0.520 C.101 D.2.8-6.0 E.13.37	A.6.101 B.0.702 C.101 D.4.8-8.6 E.11.51	A.2.333 B.0.274 C.101 D.1.8-3.3 E.11.74	A.3.044 B.0.371 C.101 D.2.2-4.4 E.12.19	A.3.164 B.0.351 C.101 D.2.4-4.3 E.11.09	A.6.108 B.0.715 C.101 D.4.7-8.7 E.11.71	A.1.178 B.0.211 C.101 D.0.8-2.0 E.17.91	A.0.925 B.0.203 C.101 D.0.6-1.9 E.21.95	A.4.80 B.0.36 C.101 D.3.75-6.00 E.7.5	A.0.64 B.0.038 C.101 D.0.51-0.74 E.5.94	A.0.19 B.0.019 C.101 D.0.15-0.24 E.10	A.0.78 B.0.077 C.101 D.0.57-1.00 E.9.87	A.0.82 B.0.039 C.101 D.0.67-0.94 E.4.76
12.	PARZY- NÓW	A.3.791 B.1.453 C.46 D.1.8-6.5 E.38.32	A.6.057 B.2.133 C.46 D.2.8-9.2 E.35.21	A.2.485 B.0.854 C.46 D.1.4-4.2 E.34.37	A.2.950 B.1.049 C.46 D.1.5-4.7 E.35.56	A.3.154 B.1.144 C.46 D.1.6-5.5 E.36.27	A.6.141 B.2.217 C.46 D.2.8-9.4 E.36.1	A.1.309 B.0.552 C.46 D.0.5-2.4 E.42.17	A.1.161 B.0.534 C.46 D.0.4-2.2 E.45.99	A.4.60 B.0.92 C.46 D.2.75-5.9 E.2	A.0.62 B.0.054 C.46 D.0.51-0.78 E.8.71	A.0.21 B.0.024 C.46 D.0.16-0.26 E.11.43	A.0.87 B.0.066 C.46 D.0.71-1.00 E.7.59	A.0.84 B.0.045 C.46 D.0.75-0.95 E.5.36
13.	GDYNIA	A.4.359 B.0.406 C.51 D.3.3-5.5 E.9.31	A.7.026 B.0.555 C.51 D.5.7-8.3 E.7.9	A.2.516 B.0.272 C.51 D.2.0-3.2 E.10.81	A.3.337 B.0.304 C.51 D.2.7-4.2 E.9.11	A.3.478 B.0.321 C.51 D.2.7-4.3 E.9.23	A.7.075 B.0.554 C.51 D.5.7-8.4 E.7.83	A.1.633 B.0.214 C.51 D.1.2-2.2 E.13.1	A.1.386 B.0.211 C.51 D.1.0-1.8 E.15.22	A.5.30 B.0.24 C.51 D.4.75-5.75 E.4.5	A.0.62 B.0.037 C.51 D.0.52-0.70 E.5.97	A.0.23 B.0.023 C.51 D.0.19-0.27 E.10	A.0.85 B.0.74 C.51 D.0.71-1.00 E.8.71	A.0.80 B.0.036 C.51 D.0.69-0.87 E.4.5
14.	GLIWICE	A.3.589 B.0.632 C.149 D.1.5-5.5 E.17.61	A.5.984 B.0.863 C.149 D.2.5-8.1 E.14.42	A.2.183 B.0.373 C.149 D.0.5-3.2 E.17.09	A.2.943 B.0.460 C.149 D.1.0-4.0 E.15.63	A.2.936 B.0.515 C.149 D.1.0-4.2 E.17.34	A.5.970 B.0.863 C.149 D.2.4-7.6 E.14.45	A.1.166 B.0.294 C.149 D.0.3-2.0 E.25.21	A.1.006 B.0.261 C.149 D.0.3-1.9 E.25.94	A.4.62 B.0.44 C.149 D.2.50-5.50 E.9.52	A.0.60 B.0.039 C.149 D.0.49-0.70 E.6.5	A.0.19 B.0.028 C.149 D.0.12-0.27 E.14.74	A.0.87 B.0.063 C.149 D.0.67-1.00 E.7.24	A.0.82 B.0.053 C.149 D.0.46-0.93 E.4.27
15.	RADOM	A.4.135 B.1.036 C.118 D.1.8-5.8 E.25.05	A.6.705 B.1.580 C.118 D.3.0-8.7 E.23.56	A.2.542 B.0.509 C.118 D.1.3-3.3 E.20.02	A.3.239 B.0.776 C.118 D.1.2-4.5 E.23.96	A.3.357 B.0.769 C.118 D.1.3-4.5 E.22.91	A.6.708 B.1.577 C.118 D.2.9-9.0 E.23.51	A.1.566 B.0.449 C.118 D.0.6-2.3 E.28.67	A.1.292 B.0.374 C.118 D.0.4-2.0 E.28.95	A.4.98 B.0.77 C.118 D.3.00-6.00 E.15.46	A.0.61 B.0.033 C.118 D.0.52-0.71 E.5.41	A.0.23 B.0.023 C.118 D.0.16-0.28 E.10	A.0.83 B.0.070 C.118 D.0.67-1.00 E.8.43	A.0.82 B.0.048 C.118 D.0.68-1.00 E.5.85

Tabela 1 continued. Interpopulation variability of *Trichia hispida* in Poland.

16.	GOŁDAP 1	A.4.564 B.0.466 C.156 D.2.5-5.5 E.10.21	A.7.635 B.0.787 C.156 D.4.1-9.5 E.10.31	A.2.761 B.0.256 C.156 D.1.8-3.3 E.9.27	A.3.653 B.0.402 C.156 D.2.1-4.8 E.11	A.3.729 B.0.329 C.156 D.2.2-4.5 E.8.82	A.7.646 B.0.778 C.156 D.4.1-9.4 E.10.17	A.1.756 B.0.274 C.156 D.0.8-2.6 E.15.6	A.1.512 B.0.244 C.156 D.0.7-2.0 E.16.14	A.5.36 B.0.31 C.156 D.3.75-5.75 E.5.78	A.0.60 B.0.037 C.156 D.0.51-0.70 E.5.17	A.0.23 B.0.023 C.156 D.0.16-0.29 E.10	A.0.83 B.0.065 C.156 D.0.73-0.89 E.7.83	A.0.82 B.0.034 C.156 D.0.73-0.89 E.4.15
17.	GOŁDAP 2	A.3.947 B.0.566 C.72 D.2.7-5.2 E.14.34	A.6.526 B.0.973 C.72 D.4.6-8.3 E.14.91	A.2.451 B.0.270 C.72 D.1.8-3.2 E.11.02	A.3.157 B.0.441 C.72 D.2.2-4.4 E.15.97	A.3.288 B.0.412 C.72 D.2.2-4.2 E.12.53	A.6.522 B.0.963 C.72 D.4.7-8.4 E.14.76	A.1.426 B.0.346 C.72 D.0.9-2.3 E.24.26	A.1.276 B.0.308 C.72 D.0.7-2.0 E.24.14	A.5.02 B.0.42 C.72 D.4.25-5.75 E.8.37	A.0.61 B.0.033 C.72 D.0.55-0.70 E.5.41	A.0.22 B.0.023 C.72 D.0.17-0.28 E.10.45	A.0.90 B.0.055 C.72 D.0.78-1.00 E.6.11	A.0.84 B.0.041 C.72 D.0.71-0.93 E.4.88
18.	BŁĄDZISZK I	A.3.374 B.0.510 C.90 D.2.2-4.8 E.15.51	A.5.581 B.0.662 C.90 D.3.9-7.6 E.11.86	A.1.993 B.0.318 C.90 D.1.3-3.0 E.15.94	A.2.636 B.0.331 C.90 D.2.0-3.5 E.12.56	A.2.730 B.0.428 C.90 D.1.8-4.0 E.15.68	A.5.583 B.0.667 C.90 D.3.8-7.7 E.11.95	A.1.128 B.0.20 C.90 D.0.6-1.9 E.17.73	A.0.982 B.0.181 C.90 D.0.5-1.7 E.18.43	A.4.87 B.0.42 C.90 D.3.75-5.66 E.8.62	A.0.60 B.0.040 C.90 D.0.5-0.70 E.6.67	A.0.20 B.0.021 C.90 D.0.13-0.25 E.10.5	A.0.87 B.0.063 C.90 D.0.7-1.0 E.7.24	A.0.81 B.0.049 C.90 D.0.71-0.93 E.6.05
19.	BIŁGORAJ	A.3.418 B.0.522 C.114 D.2.3-5.3 E.15.27	A.5.758 B.0.838 C.114 D.4.1-8.2 E.14.55	A.2.259 B.0.206 C.114 D.1.7-2.9 E.9.12	A.2.797 B.0.354 C.114 D.1.9-4.0 E.12.66	A.2.884 B.0.375 C.114 D.2.0-4.1 E.13	A.5.733 B.0.855 C.114 D.3.2-8.2 E.14.91	A.1.235 B.0.252 C.114 D.0.8-1.9 E.20.39	A.1.072 B.0.228 C.114 D.0.7-1.8 E.21.27	A.4.66 B.0.40 C.114 D.3.5-5.75 E.8.58	A.0.59 B.0.03 C.114 D.0.51-0.69 E.5.08	A.0.21 B.0.025 C.114 D.0.15-0.31 E.11.9	A.0.87 B.0.077 C.114 D.0.65-1.00 E.9.85	A.0.85 B.0.036 C.114 D.0.73-0.93 E.4.23
20.	STAW	A.3.958 B.0.670 C.203 D.2.0-5.5 E.15.93	A.6.880 B.0.906 C.203 D.3.1-8.7 E.13.17	A.2.282 B.0.268 C.203 D.1.2-3.0 E.11.74	A.3.130 B.0.455 C.203 D.1.5-4.0 E.14.54	A.3.209 B.0.481 C.203 D.1.8-4.2 E.14.99	A.6.877 B.0.898 C.203 D.3.2-8.5 E.13.06	A.1.793 B.0.334 C.203 D.0.8-2.4 E.18.63	A.1.601 B.0.314 C.203 D.0.7-2.3 E.19.61	A.5.42 B.0.49 C.203 D.3.50-6.00 E.9.04	A.0.57 B.0.041 C.203 D.0.47-0.74 E.7.19	A.0.26 B.0.026 C.203 D.0.18-0.38 E.10	A.0.89 B.0.064 C.203 D.0.45-1.00 E.7.19	A.0.81 B.0.041 C.203 D.0.71-0.95 E.5.06
21.	CHEŁM	A.3.936 B.0.429 C.113 D.2.8-5.0 E.10.9	A.6.828 B.0.705 C.113 D.5.1-8.9 E.10.32	A.2.401 B.0.237 C.113 D.1.8-3.2 E.9.87	A.3.191 B.0.341 C.113 D.2.5-4.3 E.10.69	A.3.242 B.0.315 C.113 D.2.4-4.2 E.9.72	A.6.827 B.0.714 C.113 D.5.1-8.9 E.10.46	A.1.727 B.0.296 C.113 D.1.1-2.6 E.17.14	A.1.464 B.0.283 C.113 D.0.9-2.3 E.19.33	A.5.27 B.0.31 C.113 D.4.33-5.75 E.5.88	A.0.58 B.0.029 C.113 D.0.51-0.66 E.5	A.0.25 B.0.024 C.113 D.0.2-0.31 E.9.6	A.0.85 B.0.063 C.113 D.0.69-1.00 E.7.41	A.0.82 B.0.035 C.113 D.0.74-0.91 E.4.27

Table 2. Interpopulation variability of adult specimens of *Trichia hispida* in Poland.

No.	Locality	Shell height A. Mean B. SD C. NS D. Range E. v	Shell breadth A. Mean B. SD C. NS D.Range E.v	Aperture height A. Mean B. SD C. NS D. Range E.v	Aperture breadth A. Mean B. SD C. NS D. Range E. v	Body whorl height A. Mean B. SD C. NS D. Range E. v	Shell diameter A. Mean B. SD C. NS D. Range E. v	Umbilicus major diameter A. Mean B. SD C. NS D. Range E. v	Umbilicus minor diameter A. Mean B. SD C. NS D. Range E. v	Whorl number A.Mean B. SD C. NS D. Range E. v	Height/breadth ratio A. Mean B. SD C. NS D. Range E. v	Umbilicus major diameter to shell diameter A.Mean B. SD C. NS D. Range E. v	Umbilicus minor diameter to its major diameter A.Mean B.SD C.NS D.Range E. v	Relative height of body whorl A. Mean B. SD C. NS D. Range E. v
1.	LUBAWKA	A.4.814 B.0.442 C.35 D.4.2-5.5 E.9.18	A.7.566 B.0.638 C.35 D.6.3-9.0 E.8.43	A.2.709 B.0.309 C.35 D.2.1-3.5 E.11.41	A.3.640 B.0.307 C.35 D.3.0-4.3 E.8.43	A.3.860 B.0.316 C.35 D.3.3-4.5 E.8.19	A.7.554 B.0.659 C.35 D.6.3-9.0 E.8.72	A.1.631 B.0.262 C.35 D.1.0-2.1 E.16.06	A.1.391 B.0.285 C.35 D.0.8-2.0 E.20.49	A.5.45 B.0.24 C.35 D.5.25-6.00 E.4.4	A.0.63 B.0.039 C.35 D.0.56-0.71 E.6.19	A.0.21 B.0.023 C.35 D.0.15-0.26 E.10.95	A.0.85 B.0.070 C.35 D.0.61-0.95 E.8.23	A.0.80 B.0.028 C.35 D.0.75-0.86 E.3.5
2.	WAŁ-BRZYCH	A.4.802 B.0.393 C.46 D.3.9-5.7 E.8.18	A.7.643 B.0.475 C.46 D.6.5-8.9 E.6.21	A.2.757 B.0.244 C.46 D.2.2-3.3 E.8.85	A.3.626 B.0.346 C.46 D.2.5-4.2 E.9.54	A.3.811 B.0.247 C.46 D.3.3-4.3 E.6.48	A.7.552 B.0.899 C.46 D.2.6-8.6 E.11.9	A.1.796 B.0.209 C.46 D.1.4-2.2 E.11.64	A.1.539 B.0.227 C.46 D.1.2-2.0 E.14.75	A.5.46 B.0.18 C.46 D.5.25-6.00 E.3.3	A.0.63 B.0.043 C.46 D.0.53-0.74 E.6.82	A.0.24 B.0.066 C.46 D.0.18-0.65 E.27.5	A.0.86 B.0.057 C.46 D.0.72-0.95 E.6.63	A.0.79 B.0.034 C.46 D.0.68-0.87 E.4.3
3.	STĘSZEW	A.4.587 B.0.348 C.55 D.4.0-5.6 E.7.59	A.7.533 B.0.461 C.55 D.6.5-8.7 E.5.44	A.2.716 B.0.277 C.55 D.2.0-3.4 E.10.2	A.3.735 B.0.357 C.55 D.3.0-4.7 E.9.56	A.3.649 B.0.292 C.55 D.3.1-4.4 E.8.02	A.7.564 B.0.529 C.55 D.6.5-9.0 E.6.99	A.1.625 B.0.217 C.55 D.1.1-2.0 E.13.35	A.1.358 B.0.198 C.55 D.0.9-1.8 E.14.58	A.5.40 B.0.15 C.55 D.5.25-5.75 E.2.78	A.0.61 B.0.040 C.55 D.0.53-0.72 E.6.56	A.0.21 B.0.025 C.55 D.0.13-0.26 E.11.9	A.0.84 B.0.066 C.55 D.0.65-1.00 E.7.86	A.0.80 B.0.041 C.55 D.0.67-0.88 E.5.12
4.	CHYBY	A.4.276 B.0.282 C.38 D.3.7-4.8 E.6.59	A.7.063 B.0.481 C.38 D.6.2-8.5 E.6.81	A.2.537 B.0.282 C.38 D.2.0-3.3 E.11.11	A.3.489 B.0.316 C.38 D.2.7-4.0 E.9.06	A.3.447 B.0.277 C.38 D.2.8-4.0 E.8.04	A.7.061 B.0.497 C.38 D.6.3-8.5 E.7.04	A.1.618 B.0.22 C.38 D.1.2-2.2 E.13.6	A.1.355 B.0.205 C.38 D.1.0-2.0 E.15.13	A.5.41 B.0.14 C.38 D.5.25-5.75 E.2.59	A.0.61 B.0.037 C.38 D.0.53-0.68 E.6.07	A.0.23 B.0.023 C.38 D.0.18-0.27 E.10	A.0.84 B.0.078 C.38 D.0.71-1.00 E.9.29	A.0.81 B.0.040 C.38 D.0.75-0.93 E.4.94
5.	POZNAŃ	A.4.582 B.0.465 C.45 D.3.5-5.5 E.10.14	A.7.631 B.0.673 C.45 D.6.0-9.0 E.8.82	A.2.553 B.0.307 C.45 D.1.9-3.2 E.12.02	A.3.633 B.0.407 C.45 D.2.9-4.5 E.11.12	A.3.667 B.0.334 C.45 D.2.8-4.4 E.9.11	A.7.442 B.0.593 C.45 D.5.8-8.8 E.7.97	A.1.724 B.0.284 C.45 D.1.0-2.3 E.16.47	A.1.476 B.0.309 C.45 D.0.8-2.1 E.20.93	A.5.58 B.0.26 C.45 D.5.25-6.00 E.4.66	A.0.60 B.0.044 C.45 D.0.51-0.68 E.7.33	A.0.24 B.0.10 C.45 D.0.17-0.89 E.41.66	A.0.85 B.0.079 C.45 D.0.65-1.00 E.9.29	A.0.81 B.0.036 C.45 D.0.73-0.87 E.4.44
6.	MUSZKO-WICE	A.5.061 B.0.346 C.23 D.4.5-6.0 E.6.84	A.7.639 B.0.346 C.23 D.7.0-8.3 E.4.53	A.2.904 B.0.364 C.23 D.2.4-3.7 E.12.53	A.3.874 B.0.366 C.23 D.3.1-7.5 E.9.45	A.4.287 B.0.338 C.23 D.3.8-5.0 E.7.88	A.7.678 B.0.448 C.23 D.6.7-8.5 E.5.83	A.0.896 B.0.126 C.23 D.0.6-1.2 E.14.06	A.0.822 B.0.113 C.23 D.0.6-1.0 E.13.75	A.5.30 B.0.14 C.23 D.5.15-5.75 E.2.64	A.0.66 B.0.048 C.23 D.0.60-0.79 E.7.27	A.0.12 B.0.016 C.23 D.0.08-0.16 E.13.33	A.0.92 B.0.077 C.23 D.0.78-1.00 E.8.37	A.0.85 B.0.044 C.23 D.0.78-0.91 E.5.18
7.	OŁAWA	A.4.625 B.0.422 C.53 D.3.8-5.6 E.9.08	A.7.442 B.0.674 C.53 D.6.0-8.9 E.9.06	A.2.664 B.0.262 C.53 D.2.2-3.3 E.9.83	A.3.498 B.0.353 C.53 D.2.8-4.3 E.10.09	A.3.702 B.0.317 C.53 D.3.2-4.5 E.8.56	A.7.442 B.0.660 C.53 D.6.0-9.0 E.8.87	A.1.791 B.0.3 C.53 D.1.2-2.5 E.16.75	A.1.583 B.0.294 C.53 D.1.0-2.2 E.18.57	A.5.43 B.0.18 C.53 D.5.25-6.00 E.3.31	A.0.62 B.0.056 C.53 D.0.51-0.83 E.9.03	A.0.24 B.0.032 C.53 D.0.16-0.31 E.13.33	A.0.88 B.0.073 C.53 D.0.63-1.00 E.8.29	A.0.80 B.0.038 C.53 D.0.73-0.89 E.4.75

Table 2 continued. Interpopulation variability of adult specimens of *Trichia hispida* in Poland.

8.	RĄBCZYN	A.4.466 B.0.484 C.41 D.3.0-5.5 E.10.84	A.7.249 B.0.659 C.41 D.5.5-8.8 E.9.09	A.2.576 B.0.234 C.41 D.1.9-3.0 E.9.08	A.3.456 B.0.308 C.41 D.2.6-4.2 E.8.91	A.3.566 B.0.348 C.41 D.2.5-4.0 E.9.76	A.7.232 B.0.673 C.41 D.5.5-8.8 E.9.31	A.1.690 B.0.231 C.41 D.1.1-2.2 E.13.67	A.1.417 B.0.252 C.41 D.1.0-2.0 E.17.78	A.5.41 B.0.15 C.41 D.5.25-5.75 E.2.77	A.0.62 B.0.048 C.41 D.0.53-0.75 E.7.74	A.0.23 B.0.022 C.41 D.0.18-0.29 E.9.56	A.0.84 B.0.081 C.41 D.0.67-1.00 E.9.64	A.0.80 B.0.043 C.41 D.0.70-0.88 E.5.37
9.	JAROCIN 1	A.4.730 B.0.422 C.74 D.3.9-5.8 E.8.92	A.7.187 B.0.594 C.74 D.5.8-8.5 E.8.26	A.2.757 B.0.219 C.74 D.2.1-3.4 E.7.94	A.3.569 B.0.332 C.74 D.2.8-4.3 E.9.3	A.3.705 B.0.291 C.74 D.3.0-4.4 E.7.85	A.7.197 B.0.598 C.74 D.6.0-8.4 E.8.31	A.1.543 B.0.240 C.74 D.1.0-2.2 E.15.55	A.1.273 B.0.205 C.74 D.0.9-2.0 E.16.1	A.5.45 B.0.19 C.74 D.5.25-6.00 E.3.49	A.0.66 B.0.040 C.74 D.0.53-0.74 E.6.06	A.0.21 B.0.026 C.74 D.0.16-0.31 E.12.38	A.0.83 B.0.072 C.74 D.0.65-1.00 E.8.67	A.0.78 B.0.041 C.74 D.0.61-0.88 E.5.26
10.	JAROCIN 2	A.4.571 B.0.380 C.83 D.3.7-5.7 E.8.31	A.6.98 B.0.565 C.83 D.5.8-9.0 E.8.09	A.2.588 B.0.225 C.83 D.2.0-3.2 E.8.69	A.3.484 B.0.290 C.83 D.2.7-4.1 E.8.32	A.3.580 B.0.276 C.83 D.3.0-4.3 E.7.71	A.6.960 B.0.538 C.83 D.5.8-8.7 E.8.31	A.1.636 B.0.188 C.83 D.1.2-2.0 E.11.49	A.1.319 B.0.174 C.83 D.1.0-1.7 E.13.19	A.5.41 B.0.16 C.83 D.5.10-5.75 E.2.96	A.0.65 B.0.033 C.83 D.0.58-0.75 E.5.08	A.0.23 B.0.022 C.83 D.0.17-0.28 E.9.56	A.0.81 B.0.068 C.83 D.0.65-1.00 E.8.39	A.0.78 B.0.030 C.83 D.0.67-0.85 E.3.85
11.	WĘGIERKI	A.4.673 B.0.516 C.15 D.4.0-6.0 E.11.04	A.7.073 B.0.788 C.15 D.5.9-8.6 E.11.14	A.2.653 B.0.311 C.15 D.2.2-3.3 E.11.72	A.3.527 B.0.388 C.15 D.3.0-4.4 E.11	A.3.687 B.0.318 C.15 D.3.2-4.3 E.8.62	A.7.107 B.0.792 C.15 D.6.0-8.7 E.11.14	A.1.447 B.0.236 C.15 D.1.1-2.0 E.16.31	A.1.173 B.0.266 C.15 D.0.8-1.9 E.22.67	A.5.38 B.0.22 C.15 D.5.25-6.00 E.4.09	A.0.66 B.0.037 C.15 D.0.60-0.74 E.5.61	A.0.20 B.0.017 C.15 D.0.18-0.24 E.8.5	A.0.81 B.0.072 C.15 D.0.67-0.95 E.8.89	A.0.79 B.0.042 C.15 D.0.67-0.84 E.5.32
12.	PARZY- NÓW	A.5.182 B.0.563 C.22 D.4.3-6.5 E.10.86	A.8.091 B.0.593 C.22 D.6.8-9.2 E.7.33	A.3.273 B.0.482 C.22 D.2.7-4.2 E.14.73	A.3.955 B.0.328 C.22 D.3.2-4.7 E.8.29	A.4.255 B.0.477 C.22 D.3.5-5.5 E.11.21	A.8.277 B.0.562 C.22 D.7.0-9.4 E.6.79	A.1.823 B.0.239 C.22 D.1.4-2.4 E.13.11	A.1.664 B.0.228 C.22 D.1.3-2.2 E.13.7	A.5.45 B.0.24 C.22 D.5.10-5.90 E.4.4	A.0.64 B.0.060 C.22 D.0.55-0.78 E.9.37	A.0.22 B.0.024 C.22 D.0.16-0.26 E.10.91	A.0.91 B.0.055 C.22 D.0.76-1.00 E.6.04	A.0.82 B.0.033 C.22 D.0.77-0.89 E.4.02
13.	GDYNIA	A.4.514 B.0.342 C.36 D.4.0-5.5 E.7.58	A.7.253 B.0.423 C.36 D.6.4-8.3 E.5.83	A.2.581 B.0.266 C.36 D.2.1-3.2 E.10.31	A.3.436 B.0.287 C.36 D.3.0- 4.28.35	A.3.589 B.0.275 C.36 D.3.1-4.3 E.7.66	A.7.306 B.0.404 C.36 D.6.5-8.4 E.5.53	A.1.686 B.0.193 C.36 D.1.3-2.2 E.11.45	A.1.428 B.0.194 C.36 D.1.1-1.8 E.13.58	A.5.43 B.0.15 C.36 D.5.25-5.75 E.2.76	A.0.62 B.0.036 C.36 D.0.56-0.69 E.5.81	A.0.23 B.0.024 C.36 D.0.19-0.27 E.10.43	A.0.85 B.0.073 C.36 D.0.71-1.00 E.8.59	A.0.80 B.0.034 C.36 D.0.71-0.87 E.4.25
14.	GLIWICE	A.4.522 B.0.447 C.9 D.3.7-5.0 E.9.88	A.7.111 B.0.431 C.9 D.6.4-7.6 E.6.06	A.2.522 B.0.254 C.9 D.2.2-3.0 E.10.07	A.3.556 B.0.317 C.9 D.3.0-4.0 E.8.91	A.3.600 B.0.316 C.9 D.3.2-4.0 E.8.78	A.7.044 B.0.422 C.9 D.6.4-7.5 E.5.99	A.1.611 B.0.280 C.9 D.1.2-2.0 E.17.38	A.1.422 B.0.273 C.9 D.1.0-1.9 E.19.2	A.5.29 B.0.09 C.9 D.5.20-5.50 E.1.7	A.0.63 B.0.042 C.9 D.0.55-0.68 E.6.66	A.0.23 B.0.031 C.9 D.0.18-0.27 E.13.48	A.0.88 B.0.036 C.9 D.0.83-0.95 E.4.09	A.0.80 B.0.037 C.9 D.0.72-0.86 E.4.62
15.	RADOM	A.4.837 B.0.390 C.70 D.4.1-5.8 E.8.06	A.7.764 B.0.501 C.70 D.6.7-8.7 E.6.45	A.2.860 B.0.190 C.70 D.2.5-3.3 E.6.64	A.3.737 B.0.314 C.70 D.2.8-4.5 E.8.4	A.3.854 B.0.264 C.70 D.3.3-4.5 E.6.85	A.7.769 B.0.492 C.70 D.6.7-9.0 E.6.33	A.1.860 B.0.170 C.70 D.1.5-2.3 E.9.14	A.1.530 B.0.176 C.70 D.1.1-2.0 E.11.5	A.5.51 B.0.20 C.70 D.5.25-6.00 E.3.63	A.0.62 B.0.033 C.70 D.0.56-0.71 E.5.32	A.0.24 B.0.015 C.70 D.0.20-0.28 E.6.25	A.0.82 B.0.058 C.70 D.0.67-0.94 E.7.07	A.0.80 B.0.027 C.70 D.0.74-0.86 E.3.37
16.	GOŁDAP 1	A.4.733 B.0.348 C.117 D.4.0-5.5 E.7.35	A.7.930 B.0.564 C.117 D.6.3-9.5 E.7.11	A.2.809 B.0.237 C.117 D.2.2-3.3 E.8.44	A.3.787 B.0.327 C.117 D.3.1-4.8 E.8.63	A.3.837 B.0.254 C.117 D.3.1-4.5 E.6.62	A.7.935 B.0.562 C.117 D.6.4-9.4 E.7.08	A.1.835 B.0.243 C.117 D.1.2-2.6 E.13.24	A.1.575 B.0.228 C.117 D.0.9-2.0 E.14.48	A.5.49 B.0.16 C.117 D.5.20-5.75 E.2.91	A.0.60 B.0.039 C.117 D.0.51-0.70 E.6.5	A.0.23 B.0.023 C.117 D.0.16-0.29 E.10	A.0.86 B.0.060 C.117 D.0.60-1.00 E.6.98	A.0.81 B.0.032 C.117 D.0.73-0.90 E.3.95

Table 2 continued. Interpopulation variability of adult specimens of *Trichia hispida* in Poland.

17.	GOŁDAP 2	A.4.419 B.0.308 C.32 D.3.8-5.2 E.6.97	A.7.341 B.0.532 C.32 D.6.2-8.3 E.7.25	A.2.553 B.0.268 C.32 D.2.1-3.2 E.10.5	A.3.503 B.0.291 C.32 D.2.9-4.4 E.8.31	A.3.594 B.0.263 C.32 D.3.2-4.2 E.7.32	A.7.353 B.0.529 C.32 D.6.2-8.4 E.7.19	A.1.666 B.0.263 C.32 D.1.2-2.3 E.15.79	A.1.484 B.0.245 C.32 D.1.1-2.0 E.16.51	A.5.42 B.0.16 C.32 D.5.25-5.75 E.2.95	A.0.60 B.0.034 C.32 D.0.55-0.69 E.5.67	A.0.23 B.0.028 C.32 D.0.17-0.28 E.12.17	A.0.89 B.0.051 C.32 D.0.80-1.00 E.5.73	A.0.81 B.0.034 C.32 D.0.71-0.88 E.4.2
18.	BŁĄDZISZ-KI	A.3.862 B.0.369 C.26 D.3.3-4.8 E.9.55	A.6.212 B.0.443 C.26 D.5.7-7.6 E.7.13	A.2.254 B.0.315 C.26 D.1.8-3.0 E.13.97	A.2.927 B.0.243 C.26 D.2.5-3.5 E.8.3	A.3.142 B.0.330 C.26 D.2.5-4.0 E.10.5	A.6.235 B.0.463 C.26 D.5.7-7.7 E.7.43	A.1.312 B.0.168 C.26 D.1.1-1.9 E.12.8	A.1.150 B.0.153 C.26 D.1.0-1.7 E.13.3	A.5.33 B.0.15 C.26 D.5.10-5.66 E.2.81	A.0.62 B.0.034 C.26 D.0.56-0.69 E.5.48	A.0.21 B.0.019 C.26 D.0.16-0.25 E.9.05	A.0.88 B.0.052 C.26 D.0.80-1.00 E.5.91	A.0.81 B.0.046 C.26 D.0.73-0.89 E.5.68
19.	BIŁGORAJ	A.4.460 B.0.366 C.15 D.3.9-5.3 E.8.21	A.7.360 B.0.614 C.15 D.6.1-8.2 E.8.34	A.2.487 B.0.233 C.15 D.2.2-2.9 E.9.37	A.3.433 B.0.289 C.15 D.3.0-4.0 E.8.42	A.3.567 B.0.313 C.15 D.3.0-4.1 E.8.77	A.7.3 B.0.578 C.15 D.6.2-8.2 E.7.92	A.1.627 B.0.205 C.15 D.1.2-1.9 E.12.6	A.1.447 B.0.196 C.15 D.1.1-1.8 E.13.54	A.5.42 B.0.16 C.15 D.5.25-5.75 E.2.95	A.0.61 B.0.033 C.15 D.0.54-0.65 E.5.41	A.0.22 B.0.020 C.15 D.0.18-0.25 E.9.09	A.0.89 B.0.060 C.15 D.0.76-1.00 E.6.74	A.0.80 B.0.032 C.15 D.0.73-0.85 E.4
20.	STAW	A.4.306 B.0.387 C.141 D.3.5-5.5 E.8.99	A.7.355 B.0.457 C.141 D.6.4-8.7 E.6.21	A.2.380 B.0.199 C.141 D.1.9-3.0 E.8.36	A.3.335 B.0.279 C.141 D.2.7-4.0 E.8.37	A.3.454 B.0.275 C.141 D.2.9-4.2 E.7.96	A.7.348 B.0.456 C.141 D.6.3-8.5 E.6.21	A.1.958 B.0.193 C.141 D.1.5-2.4 E.9.86	A.1.755 B.0.193 C.141 D.1.2-2.3 E.11	A.5.68 B.0.22 C.141 D.5.25-6.00 E.3.87	A.0.58 B.0.034 C.141 D.0.50-0.70 E.5.86	A.0.27 B.0.018 C.141 D.0.21-0.33 E.6.67	A.0.90 B.0.055 C.141 D.0.68-1.00 E.6.11	A.0.80 B.0.035 C.141 D.0.73-0.89 E.4.37
21.	CHEŁM	A.4.069 B.0.346 C.85 D.3.5-4.9 E.8.5	A.7.053 B.0.542 C.85 D.6.1-8.7 E.7.68	A.2.438 B.0.220 C.85 D.2.0-3.2 E.9.02	A.3.276 B.0.295 C.85 D.2.6-4.2 E.9	A.3.333 B.0.252 C.85 D.2.8-4.0 E.7.56	A.7.055 B.0.551 C.85 D.6.1-8.9 E.7.81	A.1.815 B.0.243 C.85 D.1.3-2.6 E.13.39	A.1.546 B.0.232 C.85 D.1.0-2.3 E.15	A.5.41 B.0.17 C.85 D.5.00-5.75 E.3.14	A.0.58 B.0.030 C.85 D.0.51-0.66 E.5.17	A.0.26 B.0.022 C.85 D.0.20-0.31 E.8.46	A.0.85 B.0.061 C.85 D.0.71-1.00 E.7.18	A.0.82 B.0.034 C.85 D.0.75-0.91 E.4.15

Table 3. Interpopulation variability of juvenile specimens of *Trichia hispida* in Poland.

No.	Locality	Shell height A. Mean B. SD C. NS D. Range E. v	Shell breadth A. Mean B. SD C. NS D. Range E. v	Aperture height A. Mean B. SD C. NS D. Range E. v	Aperture breadth A. Mean B. SD C. NS D. Range E. v	Body whorl height A. Mean B. SD C. NS D. Range E. v	Shell diameter A. Mean B. SD C. NS D. Range E. v	Umbilicus major diameter A. Mean B. SD C. NS D. Range E. v	Umbilicus minor diameter A. Mean B. SD C. NS D. Range E. v	Whorl number A. Mean B. SD C. NS D. Range E. v	Height/breadth ratio A. Mean B. SD C. NS D. Range E. v	Umbilicus major diameter to shell diameter A.Mean B. SD C. NS D. Range E. v	Umbilicus minor diameter to its major diameter A.Mean B.SD C.NS D.Range E. v	Wysokość ostatniego skrętu/Wyso-kość muszli A. Średnia B. SD C. NS D. Zakres E. v
1.	LUBAWKA	A.3.915 B.0.406 C.33 D.3.0-4.8 E.10.37	A.6.355 B.0.567 C.33 D.4.6-7.7 E.8.92	A.2.348 B.0.236 C.33 D.1.7-2.7 E.10.05	A.3.036 B.0.308 C.33 D.2.5-3.7 E.10.14	A.3.176 B.0.325 C.33 D.2.5-3.8 E.10.23	A.6.391 B.0.584 C.33 D.4.5-7.7 E.9.14	A.1.394 B.0.26 C.33 D.0.8-2.2 E.18.65	A.1.197 B.0.236 C.33 D.0.7-1.9 E.19.72	A.4.84 B.0.24 C.33 D.4.00-5.00 E.4.96	A.0.62 B.0.039 C.33 D.0.54-0.70 E.6.29	A.0.22 B.0.026 C.33 D.0.17-0.29 E.11.82	A.0.86 B.0.041 C.33 D.0.79-0.93 E.4.77	A.0.81 B.0.037 C.33 D.0.71-0.89 E.4.57
2.	WAŁ-BRZYCH	A.4.245 B.0.274 C.20 D.3.7-4.6 E.7.64	A.6.875 B.0.446 C.20 D.5.6-7.5 E.6.49	A.2.550 B.0.147 C.20 D.2.2-2.8 E.5.76	A.3.355 B.0.296 C.20 D.2.7-4.0 E.8.82	A.3.500 B.0.172 C.20 D.3.2-3.8 E.4.91	A.6.890 B.0.441 C.20 D.5.9-7.6 E.6.4	A.1.525 B.0.197 C.20 D.1.1-1.8 E.12.92	A.1.245 B.0.221 C.20 D.0.9-1.6 E.17.75	A.5.01 B.0.12 C.20 D.4.75-5.00 E.2.39	A.0.62 B.0.040 C.20 D.0.52-0.70 E.6.45	A.0.22 B.0.024 C.20 D.0.16-0.26 E.10.91	A.0.81 B.0.063 C.20 D.0.67-0.89 E.7.78	A.0.83 B.0.038 C.20 D.0.76-0.90 E.4.58
3.	STĘSZEW	A.3.329 B.0.904 C.55 D.1.7-5.0 E.27.15	A.5.542 B.1.497 C.55 D.3.0-8.5 E.27.01	A.2.162 B.0.470 C.55 D.1.3-3.3 E.21.74	A.2.811 B.0.783 C.55 D.1.5-5.0 E.27.85	A.2.795 B.0.672 C.55 D.1.6-4.0 E.24.04	A.5.585 B.1.494 C.55 D.3.1-8.5 E.26.75	A.1.184 B.0.377 C.55 D.0.6-1.9 E.31.84	A.0.958 B.0.337 C.55 D.0.5-1.6 E.35.18	A.4.37 B.0.68 C.55 D.3.00-5.00 E.15.56	A.0.60 B.0.037 C.55 D.0.52-0.72 E.6.17	A.0.21 B.0.024 C.55 D.0.17-0.27 E.11.43	A.0.81 B.0.099 C.55 D.0.61-1.00 E.12.22	A.0.85 B.0.051 C.55 D.0.73-0.96 E.6
4.	CHYBY	A.3.500 B.0.366 C.18 D.2.8-4.0 E.10.46	A.5.806 B.0.571 C.18 D.4.7-7.1 E.9.83	A.2.239 B.0.225 C.18 D.2.0-2.9 E.10.05	A.2.861 B.0.293 C.18 D.2.5-3.5 E.10.24	A.2.889 B.0.235 C.18 D.2.5-3.3 E.8.13	A.5.811 B.0.549 C.18 D.4.7-7.0 E.9.45	A.1.294 B.0.229 C.18 D.0.8-1.7 E.17.7	A.1.056 B.0.192 C.18 D.0.7-1.3 E.18.18	A.4.71 B.0.31 C.18 D.3.75-5.00 E.6.58	A.0.60 B.0.044 C.18 D.0.53-0.70 E.7.33	A.0.22 B.0.030 C.18 D.0.15-0.27 E.13.64	A.0.82 B.0.073 C.18 D.0.67-0.92 E.8.9	A.0.83 B.0.032 C.18 D.0.75-0.89 E.3.85
5.	POZNAŃ	A.3.531 B.0.566 C.13 D.2.6-4.5 E.16.03	A.5.877 B.0.864 C.13 D.4.5-7.7 E.14.7	A.2.269 B.0.287 C.13 D.1.8-2.8 E.12.65	A.2.808 B.0.375 C.13 D.2.3-3.6 E.13.28	A.2.646 B.0.412 C.13 D.2.3-3.8 E.15.57	A.5.869 B.0.899 C.13 D.4.6-8.0 E.15.32	A.1.208 B.0.266 C.13 D.0.9-1.7 E.22.02	A.1.031 B.0.221 C.13 D.0.8-1.5 E.21.43	A.4.62 B.0.39 C.13 D.3.75-5.00 E.8.41	A.0.60 B.0.032 C.13 D.0.54-0.68 E.5.33	A.0.20 B.0.023 C.13 D.0.16-0.25 E.11.5	A.0.86 B.0.068 C.13 D.0.75-1.00 E.7.91	A.0.84 B.0.038 C.13 D.0.77-0.90 E.4.52
6.	MUSZKO-WICE	A.4.187 B.0.605 C.39 D.2.7-5.2 E.14.45	A.6.403 B.0.749 C.39 D.4.9-7.9 E.11.7	A.2.600 B.0.430 C.39 D.2.0-3.7 E.16.54	A.2.982 B.0.550 C.39 D.2.1-4.0 E.18.43	A.3.533 B.0.534 C.39 D.2.2-4.5 E.15.11	A.6.292 B.0.755 C.39 D.4.4-7.9 E.12	A.6.38 B.0.137 C.39 D.0.4-0.9 E.21.47	A.0.621 B.0.126 C.39 D.0.4-0.9 E.20.29	A.4.76 B.0.27 C.39 D.4.00-5.00 E.5.67	A.0.65 B.0.048 C.39 D.0.55-0.76 E.7.38	A.0.10 B.0.015 C.39 D.0.07-0.13 E.15	A.0.98 B.0.058 C.39 D.0.78-1.00 E.5.92	A.0.84 B.0.048 C.39 D.0.74-0.94 E.5.71
7.	OŁAWA	A.3.172 B.0.567 C.189 D.1.7-4.9 E.17.87	A.5.140 B.0.865 C.189 D.3.0-8.4 E.16.83	A.2.044 B.0.342 C.189 D.1.2-3.0 E.16.73	A.2.501 B.0.459 C.189 D.1.3-4.0 E.18.35	A.2.629 B.0.447 C.189 D.1.6-4.0 E.17	A.5.128 B.0.846 C.189 D.3.1-8.4 E.16.5	A.1.128 B.0.228 C.189 D.0.6-2.3 E.20.21	A.0.959 B.0.226 C.189 D.0.5-2.3 E.23.57	A.4.40 B.0.38 C.189 D.3.00-5.00 E.8.64	A.0.62 B.0.038 C.189 D.0.51-0.75 E.6.13	A.0.22 B.0.027 C.189 D.0.14-0.28 E.12.27	A.0.84 B.0.066 C.189 D.0.70-1.00 E.7.86	A.0.83 B.0.039 C.189 D.0.71-0.94 E.4.7

Table 3 continued. Interpopulation variability of juvenile specimens of *Trichia hispida* in Poland.

8.	RĄBCZYN	A.3.932 B.0.482 C.19 D.2.9-4.5 E.12.26	A.6.500 B.0.705 C.19 D.5.0-7.6 E.10.85	A.2.437 B.0.279 C.19 D.1.9-2.9 E.11.45	A.3.100 B.0.416 C.19 D.2.3-3.6 E.13.42	A.3.242 B.0.344 C.19 D.2.5-3.6 E.10.61	A.6.479 B.0.725 C.19 D.5.0-7.5 E.11.19	A.1.479 B.0.257 C.19 D.1.0-1.9 E.17.38	A.1.253 B.0.239 C.19 D.0.8-1.6 E.19.07	A.4.89 B.0.22 C.19 D.4.33-5.00 E.4.5	A.0.60 B.0.032 C.19 D.0.0-0.64 E.5.55	A.0.23 B.0.019 C.19 D.0.19-0.26 E.8.26	A.0.85 B.0.049 C.19 D.0.71-0.90 E.5.76	A.0.83 B.0.033 C.19 D.0.77-0.89 E.3.97
9.	JAROCIN 1	A.3.750 B.0.640 C.46 D.1.9-4.8 E.17.07	A.5.776 B.0.955 C.46 D.3.0-7.5 E.16.53	A.2.374 B.0.391 C.46 D.1.0-3.0 E.16.47	A.2.909 B.0.515 C.46 D.1.5-4.0 E.17.7	A.3.098 B.0.479 C.46 D.1.5-3.9 E.15.46	A.5.796 B.0.967 C.46 D.3.0-7.6 E.16.68	A.1.146 B.0.255 C.46 D.0.4-1.7 E.22.25	A.0.961 B.0.199 C.46 D.0.3-1.3 E.20.71	A.4.66 B.0.47 C.46 D.3.00-5.15 E.10.08	A.0.65 B.0.040 C.46 D.0.57-0.78 E.6.15	A.0.19 B.0.023 C.46 D.0.13-0.24 E.12.1	A.0.84 B.0.067 C.46 D.0.73-1.00 E.7.98	A.0.83 B.0.043 C.46 D.0.77-1.00 E.5.18
10.	JAROCIN 2	A.3.642 B.0.541 C.96 D.1.5-4.7 E.14.85	A.5.638 B.0.832 C.96 D.2.2-7.0 E.14.76	A.2.273 B.0.291 C.96 D.1.1-2.9 E.12.8	A.2.865 B.0.401 C.96 D.1.2-3.5 E.14	A.2.975 B.0.389 C.96 D.1.3-3.8 E.13.08	A.5.631 B.0.821 C.96 D.2.3-7.0 E.14.58	A.1.271 B.0.284 C.96 D.0.3-1.9 E.22.34	A.1.022 B.0.249 C.96 D.0.2-1.6 E.24.36	A.4.65 B.0.43 C.96 D.2.50-5.00 E.9.24	A.0.65 B.0.035 C.96 D.0.56-0.77 E.5.38	A.0.22 B.0.027 C.96 D.0.13-0.28 E.12.27	A.0.80 B.0.073 C.96 D.0.64-1.00 E.9.12	A.0.82 B.0.044 C.96 D.0.69-0.96 E.5.37
11.	WĘGIERKI	A.3.751 B.0.385 C.86 D.2.8-4.5 E.10.26	A.5.931 B.0.531 C.86 D.4.8-7.0 E.8.95	A.2.277 B.0.226 C.86 D.1.8-2.8 E.9.92	A.2.959 B.0.297 C.86 D.2.2-3.7 E.10.04	A.3.073 B.0.268 C.86 D.2.4-3.7 E.8.72	A.5.934 B.0.539 C.86 D.4.7-7.0 E.9.08	A.1.131 B.0.168 C.86 D.0.8-1.6 E.14.85	A.0.881 B.0.155 C.86 D.0.6-1.3 E.17.59	A.4.70 B.0.27 C.86 D.3.75-5.00 E.5.74	A.0.63 B.0.037 C.86 D.0.51-0.73 E.5.87	A.0.19 B.0.019 C.86 D.0.15-0.23 E.10	A.0.78 B.0.077 C.86 D.0.57-1.00 E.9.87	A.0.82 B.0.037 C.86 D.0.73-0.94 E.4.51
12.	PARZY- NÓW	A.2.517 B.0.547 C.24 D.1.8-4.0 E.21.73	A.4.192 B.0.996 C.24 D.2.8-7.8 E.23.76	A.1.763 B.0.278 C.24 D.1.4-2.5 E.15.77	A.2.029 B.0.451 C.24 D.1.5-3.5 E.22.23	A.2.146 B.0.367 C.24 D.1.6-3.0 E.17.1	A.4.183 B.0.982 C.24 D.2.8-7.7 E.23.48	A.0.838 B.0.243 C.24 D.0.5-1.7 E.29	A.0.700 B.0.219 C.24 D.0.4-1.5 E.31.28	A.3.85 B.0.55 C.24 D.2.75-5.00 E.14.28	A.0.60 B.0.040 C.24 D.0.51-0.67 E.6.67	A.0.20 B.0.020 C.24 D.0.17-0.25 E.10	A.0.84 B.0.047 C.24 D.0.71-0.91 E.5.59	A.0.86 B.0.078 C.24 D.0.75-0.95 E.9.07
13.	GDYNIA	A.3.987 B.0.292 C.15 D.3.3-4.5 E.7.32	A.6.487 B.0.455 C.15 D.5.7-7.4 E.7.01	A.2.360 B.0.226 C.15 D.2.0-2.7 E.9.58	A.3.100 B.0.196 C.15 D.2.7-3.5 E.6.32	A.3.213 B.0.270 C.15 D.2.7-3.6 E.8.4	A.6.520 B.0.472 C.15 D.5.7-7.4 E.7.24	A.1.507 B.0.215 C.15 D.1.2-1.9 E.14.27	A.1.287 B.0.225 C.15 D.1.0-1.7 E.17.48	A.4.98 B.0.064 C.15 D.4.75-5.00 E.1.28	A.0.62 B.0.040 C.15 D.0.52-0.70 E.6.45	A.0.23 B.0.023 C.15 D.0.19-0.27 E.10	A.0.85 B.0.080 C.15 D.0.72-1.00 E.9.41	A.0.81 B.0.041 C.15 D.0.69-0.86 E.5.06
14.	GLIWICE	A.3.529 B.0.595 C.140 D.1.5-5.5 E.16.86	A.5.911 B.0.834 C.140 D.2.5-8.1 E.14.11	A.2.161 B.0.370 C.140 D.0.5-3.2 E.17.12	A.2.904 B.0.440 C.140 D.1.0-3.8 E.15.15	A.2.894 B.0.496 C.140 D.1.0-4.2 E.17.14	A.5.901 B.0.839 C.140 D.2.4-7.6 E.14.22	A.1.138 B.0.272 C.140 D.0.3-1.8 E.23.9	A.0.979 B.0.237 C.140 D.0.3-1.6 E.24.21	A.4.58 B.0.42 C.140 D.2.50-5.10 E.9.17	A.0.60 B.0.038 C.140 D.0.49-0.70 E.6.33	A.0.19 B.0.027 C.140 D.0.12-0.25 E.14.21	A.0.86 B.0.064 C.140 D.0.67-1.00 E.7.44	A.0.82 B.0.054 C.140 D.0.56-0.93 E.6.58
15.	RADOM	A.3.110 B.0.8 C.48 D.1.8-4.7 E.25.72	A.5.160 B.1.318 C.48 D.3.0-8.4 E.25.54	A.2.079 B.0.472 C.48 D.1.3-3.1 E.22.7	A.2.513 B.0.666 C.48 D.1.2-4.1 E.26.5	A.2.631 B.0.68 C.48 D.1.3-3.9 E.25.85	A.5.160 B.1.309 C.48 D.2.9-8.1 E.25.37	A.0.138 B.0.378 C.48 D.0.6-2.1 E.33.22	A.0.944 B.0.306 C.48 D.0.4-1.7 E.32.24	A.4.20 B.0.64 C.48 D.3.00-5.00 E.15.24	A.0.60 B.0.30 C.48 D.0.52-0.67 E.5	A.0.22 B.0.027 C.48 D.0.16-0.28 E.12.27	A.0.83 B.0.085 C.48 D.0.67-1.00 E.10.24	A.0.85 B.0.057 C.48 D.0.68-1.00 E.6.71

Table 3 continued. Interpopulation variability of juvenile specimens of *Trichia hispida* in Poland.

16.	GOŁDAP 1	A.4.056 B.0.403 C.39 D.2.5-4.7 E.9.94	A.6.751 B.0.698 C.39 D.4.1-8.0 E.10.34	A.2.618 B.0.262 C.39 D.1.8-3.0 E.10.01	A.3.251 B.0.332 C.39 D.2.1-3.6 E.10.21	A.3.408 B.0.323 C.39 D.2.2-3.8 E.9.48	A.6.777 B.0.687 C.39 D.4.1-8.0 E.10.14	A.1.518 B.0.220 C.39 D.0.8-1.9 E.14.49	A.1.321 B.0.187 C.39 D.0.7-1.7 E.14.16	A.4.94 B.0.26 C.39 D.3.75-5.15 E.5.26	A.0.60 B.0.027 C.39 D.0.53-0.65 E.4.5	A.0.22 B.0.023 C.39 D.0.16-0.27 E.17.45	A.0.87 B.0.076 C.39 D.0.75-1.07 E.8.74	A.0.84 B.0.032 C.39 D.0.77-0.89 E.3.81
17.	GOŁDAP 2	A.3.570 B.0.423 C.40 D.2.7-4.5 E.11.85	A.5.875 B.0.721 C.40 D.4.6-7.5 E.12.27	A.2.370 B.0.245 C.40 D.1.8-2.8 E.10.34	A.2.880 B.0.331 C.40 D.2.2-3.5 E.11.49	A.3.043 B.3.41 C.40 D.2.2-3.8 E.11.21	A.5.858 B.0.667 C.40 D.4.7-7.3 E.11.39	A.1.235 B.0.279 C.40 D.0.9-1.9 E.22.59	A.1.110 B.0.248 C.40 D.0.7-1.7 E.22.34	A.4.70 B.0.26 C.40 D.4.25-5.00 E.5.53	A.0.61 B.0.032 C.40 D.0.55-0.70 E.5.24	A.0.21 B.0.029 C.40 D.0.17-0.28 E.13.81	A.0.90 B.0.059 C.40 D.0.78-1.00 E.6.55	A.0.85 B.0.038 C.40 D.0.78-0.93 E.4.47
18.	BŁĄDZISZ-KI	A.3.177 B.0.419 C.64 D.2.2-4.2 E.13.19	A.5.325 B.0.557 C.64 D.3.9-6.4 E.10.46	A.1.888 B.0.253 C.64 D.1.3-2.5 E.13.4	A.2.517 B.0.286 C.64 D.2.0-3.3 E.11.36	A.2.563 B.0.342 C.64 D.1.8-3.2 E.13.43	A.5.319 B.0.545 C.64 D.3.8-6.5 E.10.25	A.1.053 B.0.160 C.64 D.0.6-1.4 E.15.19	A.0.914 B.0.144 C.64 D.0.5-1.2 E.15.75	A.4.69 B.0.34 C.64 D.3.75-5.00 E.7.25	A.0.60 B.0.041 C.64 D.0.50-0.70 E.6.83	A.0.20 B.0.021 C.64 D.0.13-0.24 E.10.5	A.0.87 B.0.068 C.64 D.0.70-1.00 E.7.82	A.0.81 B.0.050 C.64 D.0.71-0.93 E.6.17
19.	BIŁGORAJ	A.3.260 B.0.322 C.99 D.2.3-4.3 E.9.88	A.5.515 B.0.550 C.99 D.4.1-7.0 E.9.97	A.2.224 B.0.178 C.99 D.1.7-2.7 E.8	A.2.701 B.0.247 C.99 D.1.9-3.3 E.9.14	A.2.781 B.0.257 C.99 D.2.0-3.3 E.9.24	A.5.496 B.0.602 C.99 D.3.2-7.0 E.10.95	A.1.176 B.0.201 C.99 D.0.8-1.8 E.17.09	A.1.015 B.0.173 C.99 D.0.7-1.5 E.17.04	A.4.54 B.0.28 C.99 D.3.50-5.00 E.6.17	A.0.59 B.0.029 C.99 D.0.51-0.69 E.4.91	A.0.21 B.0.025 C.99 D.0.15-0.31 E.11.9	A.0.88 B.0.079 C.99 D.0.65-1.00 E.8.98	A.0.85 B.0.031 C.99 D.0.77-0.93 E.3.65
20.	STAW	A.3.166 B.0.474 C.62 D.2.0-4.2 E.14.97	A.5.800 B.0.730 C.62 D.3.1-6.8 E.12.59	A.2.058 B.0.273 C.62 D.1.2-2.6 E.13.26	A.2.661 B.0.431 C.62 D.1.5-3.3 E.16.2	A.2.652 B.0.374 C.62 D.1.8-3.4 E.14.1	A.5.805 B.0.716 C.62 D.3.2-6.8 E.12.39	A.1.416 B.0.277 C.62 D.0.8-2.0 E.19.56	A.1.252 B.0.251 C.62 D.0.7-1.8 E.20.05	A.4.82 B.0.40 C.62 D.3.50-5.00 E.8.3	A.0.55 B.0.041 C.62 D.0.46-0.74 E.7.45	A.0.24 B.0.033 C.62 D.0.18-0.38 E.13.75	A.0.88 B.0.082 C.62 D.0.45-1.00 E.9.32	A.0.84 B.0.043 C.62 D.0.71-0.95 E.5.12
21.	CHEŁM	A.3.532 B.0.409 C.28 D.2.8-5.0 E.11.58	A.6.146 B.0.712 C.28 D.5.1-8.9 E.11.58	A.2.289 B.0.257 C.28 D.1.8-3.0 E.11.23	A.2.932 B.0.343 C.28 D.2.5-4.3 E.11.7	A.2.964 B.0.328 C.28 D.2.4-4.2 E.11.07	A.6.132 B.0.710 C.28 D.5.1-8.8 E.11.58	A.1.457 B.0.282 C.28 D.1.1-2.4 E.19.35	A.1.214 B.0.281 C.28 D.0.9-2.1 E.23.15	A.4.84 B.0.24 C.28 D.4.33-5.00 E.4.96	A.0.57 B.0.027 C.28 D.0.53-0.65 E.4.74	A.0.24 B.0.023 C.28 D.0.20-0.29 E.9.58	A.0.83 B.0.070 C.28 D.0.69-1.00 E.8.43	A.0.84 B.0.056 C.28 D.0.74-0.91 E.6.67

Table 4. Statistical significance of differences between the studied populations. Shell height H.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.
1.		w=1446 P>0.05	w=1859 P<0.02	w=1729 P<0.001	w=1624 P<0.05	w=912.5 P>0.05	w=1770 P>0.05	w=1631 P<0.002	w=2064 P>0.05	w=2513 P<0.01	w=9493 P>0.05	w=8770 P<0.02	w=1500 P<0.05	w=838 P>0.05	w=1822 P>0.05	w=2878 P>0.05	w=1464 P<0.001	w=1495 P<0.001	w=1009 P<0.01	w=4592 P<0.001	w=3307 P<0.001
2.	t=0.85 P>0.1		w=2398 P<0.001	t=7.13 P<0.001	t=2.38 P<0.05	w=1022 P<0.01	t=2.16 P<0.02	w=1421 P<0.001	t=0.95 P>0.1	t=3.23 P<0.002	w=3689 P>0.05	t=2.85 P<0.01	t=3.54 P<0.001	t=1.75 P<0.1	t=0.47 P>0.1	w=9306 P>0.1	t=4.82 P<0.001	t=10.14 P<0.001	t=3.08 P<0.01	w=11175 P<0.001	w=3959 P<0.001
3.	t=0.26 P>0.1	t=1.17 P>0.1		w=3124 P<0.001	w=2775 P>0.05	w=1734 P<0.001	w=2965 P>0.05	w=2820 P>0.05	w=3116 P<0.05	w=3882 P>0.05	w=1951 P>0.05	w=1758 P<0.001	w=2664 P>0.05	w=1788 P>0.05	w=2760 P<0.001	w=4036 P<0.02	w=2694 P<0.01	w=2856 P<0.001	w=2036 P>0.05	w=7101 P<0.001	w=5541 P<0.001
4.	t=3.78 P<0.001	t=5.53 P<0.001	t=4.71 P<0.001		t=3.68 P<0.001	w=1135 P<0.001	t=4.73 P<0.001	w=1883 P<0.02	t=6.77 P<0.001	t=4.76 P<0.001	w=548 P<0.001	t=7.05 P<0.001	t=3.26 P<0.002	t=1.58 P>0.1	t=8.59 P<0.001	w=1065 P<0.001	t=2.01 P<0.05	t=4.48 P<0.001	t=1.75 P<0.05	w=12679 P>0.05	w=4692 P<0.001
5.	t=0.44 P>0.1	t=0.10 P>0.1	t=0.83 P>0.1	t=4.47 P<0.001		w=1087 P<0.001	t=0.42 P>0.1	w=1679 P>0.05	t=1.68 P<0.1	t=0.20 P>0.1	w=463.5 P>0.05	t=4.29 P<0.001	t=0.76 P>0.1	t=0.39 P>0.1	t=2.99 P<0.01	w=10012 P>0.05	t=1.85 P<0.05	t=7.18 P<0.001	t=1.08 P>0.1	w=12061 P<0.001	w=4386 P<0.001
6.	t=0.56 P>0.1	t=0.04 P>0.1	t=1.11 P>0.1	t=5.42 P<0.001	t=0.06 P>0.1		w=1227 P<0.001	w=1099 P<0.001	w=1496 P<0.002	w=1877 P<0.001	w=552 P<0.002	w=506.5 P>0.05	w=1007 P<0.001	w=449 P>0.002	w=1366 P<0.01	w=2281 P<0.001	w=960 P<0.001	w=868.5 P<0.001	w=5895 P<0.001	w=3303 P<0.001	w=2201 P<0.001
7.	t=0.87 P>0.1	t=1.73 P<0.1	t=0.82 P>0.1	t=3.13 P<0.01	t=1.38 P>0.1	t=1.68 P<0.1		w=1761 P>0.05	t=1.38 P>0.1	t=0.72 P>0.1	w=517 P>0.05	t=4.18 P<0.001	t=1.36 P>0.1	t=0.64 P>0.1	t=2.85 P<0.01	w=10534 P>0.05	t=2.59 P<0.02	t=8.23 P<0.001	t=1.49 P>0.1	w=12144 P<0.001	w=4369 P<0.001
8.	w=1404 P<0.05	w=1468 P<0.001	w=1750 P<0.05	w=1863 P<0.05	w=1499 P<0.001	w=1149 P<0.001	w=1836 P>0.05		w=1888 P<0.001	w=2370 P>0.05	w=1129 P>0.05	w=1002 P<0.001	w=1581 P>0.05	w=1025 P>0.05	w=1634 P>0.05	w=2436 P<0.001	w=1590 P>0.05	w=1772 P<0.001	w=1194 P>0.05	w=4526.5 P<0.001	w=3570 P<0.001
9.	t=2.96 P<0.01	t=4.64 P<0.001	t=3.72 P<0.001	t=1.19 P>0.1	t=3.65 P<0.001	t=4.53 P<0.001	t=2.21 P<0.05	w=2483 P>0.05		t=2.47 P<0.02	w=579.5 P>0.05	t=3.49 P<0.001	t=2.87 P<0.01	t=1.33 P>0.1	t=1.58 P>0.1	w=11169 P>0.05	t=4.24 P<0.001	t=9.93 P<0.001	t=2.54 P<0.02	w=12419 P<0.001	w=4409 P<0.001
10.	t=4.71 P<0.001	t=7.09 P<0.001	t=6.30 P<0.001	t=0.83 P>0.1	t=5.52 P<0.001	t=6.93 P<0.001	t=4.15 P<0.001	w=3142 P<0.05	t=2.23 P<0.05		w=763.5 P>0.05	t=4.81 P<0.001	t=0.81 P>0.1	t=0.32 P>0.1	t=4.25 P<0.001	w=12919 P<0.001	t=2.22 P<0.05	t=8.49 P<0.001	t=1.07 P>0.1	w=13556 P<0.001	w=4822 P<0.001
11.	t=2.14 P<0.05	t=2.65 P>0.01	t=2.16 P<0.05	t=0.05 P>0.1	t=2.46 P<0.02	t=2.62 P<0.1	t=1.65 P>0.1	w=1247 P>0.05	t=0.53 P>0.1	t=5.19 P<0.001		w=1934 P<0.001	w=4260 P>0.05	w=1895 P>0.05	w=479.5 P>0.05	w=826.5 P>0.05	w=432 P<0.05	w=479.5 P<0.001	w=256 P>0.05	w=1641.5 P<0.001	w=1209 P<0.001
12.	t=3.16 P<0.01	t=3.10 P<0.01	t=3.96 P<0.001	t=6.92 P<0.001	t=2.85 P<0.01	t=3.10 P<0.01	t=4.14 P<0.001	w=994.5 P<0.001	t=6.27 P<0.001	t=7.82 P<0.001	t=4.25 P<0.001		t=5.03 P<0.001	t=3.45 P<0.002	t=2.68 P<0.01	w=7562.5 P<0.001	t=5.79 P<0.001	t=11.33 P<0.001	t=4.73 P<0.001	w=10278 P<0.001	w=3711 P<0.001
13.	t=2.43 P<0.02	t=3.92 P<0.001	t=2.98 P<0.01	t=1.81 P<0.1	t=3.08 P<0.01	t=3.83 P<0.001	t=1.62 P>0.1	w=1683 P>0.05	t=0.68 P>0.1	t=2.91 P<0.01	t=0.84 P>0.1	t=5.79 P<0.001		t=0.05 P>0.1	t=4.60 P<0.001	w=9743 P<0.001	t=1.20 P>0.1	t=7.08 P<0.001	t=0.49 P>0.1	w=11719 P<0.001	w=4217 P<0.001
14.	t=2.53 P<0.02	t=2.33 P<0.05	t=2.70 P=0.01	t=0.29 P>0.1	t=2.97 P<0.01	t=3.28 P<0.01	t=1.94 P<0.1	w=1088 P>0.05	t=0.48 P>0.1	t=0.84 P>0.1	t=0.15 P>0.1	t=5.12 P<0.001	t=0.89 P>0.1		t=2.02 P<0.05	w=7545 P>0.05	t=0.65 P>0.1	t=3.980 P<0.001	t=0.35 P>0.1	w=10430 P>0.05	w=3816 P<0.001
15.	w=3942 P>0.05	w=4279 P>0.05	w=4918 P<0.001	w=4759 P<0.001	w=4214 P>0.05	w=3391 P>0.05	w=4898 P<0.001	w=1645 P<0.001	w=6398 P<0.001	w=7481 P<0.001	w=3315 P<0.001	w=2974 P<0.001	w=4452 P<0.001	w=3013 P<0.001		t=10394 P>0.05	t=5.83 P<0.001	t=11.33 P<0.001	t=3.38 P<0.001	w=11606 P<0.001	w=4065 P<0.001
16.	t=3.04 P<0.01	t=3.29 P<0.002	t=4.89 P<0.001	t=9.24 P<0.001	t=2.64 P<0.01	t=3.27 P<0.002	t=4.59 P<0.001	w=1885 P<0.001	t=8.59 P<0.001	t=11.72 P<0.001	t=4.08 P<0.001	t=1.18 P>0.1	t=7.72 P<0.001	t=5.36 P<0.001	w=5869 P<0.05		w=9724 P<0.001	w=95009 P<0.001	w=8136 P<0.001	w=20081 P<0.001	w=4259 P<0.001
17.	t=1.57 P>0.1	t=2.57 P<0.02	t=1.70 P<0.1	t=2.27 P<0.05	t=2.11 P<0.05	t=2.51 P<0.02	t=0.76 P>0.1	w=1475 P>0.05	t=1.32 P>0.1	t=3.20 P<0.002	t=1.20 P>0.1	t=4.76 P<0.001	t=0.75 P>0.1	t=1.34 P>0.1	w=4073 P<0.001	t=5.48 P<0.001		t=6.15 P<0.001	t=0.38 P>0.1	w=11777 P>0.05	w=4279 P<0.001
18.	w=386.5 P<0.001	w=384.5 P<0.001	w=399 P<0.001	w=436 P<0.001	w=409.5 P<0.001	w=632.5 P<0.001	w=460 P<0.001	w=1802 P<0.001	w=359 P<0.001	w=632 P<0.001	w=417.5 P<0.001	w=358.5 P<0.001	w=4060 P<0.001	w=365.5 P<0.001	w=4270 P<0.001	w=403 P<0.001	w=3982 P<0.001		t=5.02 P<0.001	w=12947 P<0.001	w=5133 P<0.001
19.	t=1.07 P>0.1	t=1.63 P>0.1	t=0.02 P>0.1	t=1.78 P<0.1	t=1.44 P>0.1	t=1.60 P>0.1	t=0.45 P>0.1	w=1128 P>0.05	t=1.00 P>0.1	t=2.23 P<0.05	t=1.11 P>0.1	t=3.60 P<0.001	t=0.62 P>0.1	t=1.16 P>0.1	w=3181 P>0.02	t=3.41 P<0.001	t=0.10 P>0.1	w=382 P<0.001		w=10833 P>0.05	w=3930 P<0.001
20.	w=11939 P<0.05	w=2042 P<0.001	w=2918 P<0.001	w=3633 P<0.001	w=22585 P<0.001	w=958.5 P<0.001	w=3286 P>0.05	w=3782 P>0.05	w=5875 P<0.05	w=8366 P<0.001	w=1398 P>0.05	w=324.5 P<0.001	w=2864 P>0.05	w=801.5 P>0.05	w=9715 P<0.001	w=3435 P<0.001	w=2219 P>0.05	w=526.5 P<0.001	w=9593 P>0.05		w=5523 P<0.001
21.	t=4.18 P<0.001	t=6.44 P<0.001	t=5.61 P<0.001	t=0.0002 P>0.1	t=4.97 P<0.001	t=6.30 P<0.001	t=3.55 P<0.001	w=3113 P<0.001	t=1.48 P>0.1	t=0.85 P>0.1	t=0.09 P>0.1	t=7.44 P<0.001	t=2.18 P<0.05	t=5.12 P<0.001	w=7477 P<0.001	t=11.16 P<0.001	t=2.60 P<0.02	w=575.5 P<0.001	t=1.82 P<0.1	t=4.26 P<0.001	

Table 4a. Statistical significance of differences between the studied populations. Shell breadth - L.

Table 5. Statistical significance of differences between the studied populations. Aperture height - W.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21
1.		t=0.76 P>0.1	t=0.11 P>0.1	t=2.48 P<0.02	t=2.25 P<0.05	w=7962 P<0.05	w=2266 P>0.05	w=1587 P<0.05	w=4245 P>0.05	w=4573 P<0.05	t=0.59 P>0.1	t=4.63 P<0.01	t=1.87 P<0.1	t=1.88 P<0.1	w=4668 P<0.05	w=9453 P<0.05	t=4.21 P<0.001	w=488.5 P<0.001	t=2.79 P<0.01	w=10886 P<0.001	w=4318 P<0.001
2.	w=1440 P>0.05		t=0.79 P>0.1	t=3.78 P<0.001	t=3.50 P<0.001	w=5405 P<0.05	w=1804 P<0.001	w=1077 P<0.001	w=3465 P>0.05	w=3940 P<0.001	t=1.18 P>0.1	t=4.46 P<0.001	t=3.08 P<0.01	t=2.55 P<0.02	w=3313 P<0.05	w=8138 P>0.05	t=3.43 P<0.001	w=4024 P<0.001	t=3.85 P<0.001	w=10269 P<0.001	w=3881 P<0.001
3.	t=1.34 P>0.1	w=2170 P>0.05		t=3.03 P<0.01	t=2.76 P<0.01	w=1075 P<0.05	w=2690 P>0.05	w=1646 P<0.001	w=4999 P>0.05	w=5102 P<0.001	t=0.71 P>0.1	t=5.09 P<0.001	t=2.33 P<0.05	t=2.09 P<0.05	w=5065 P<0.001	w=10818 P<0.001	t=2.70 P<0.01	w=545.5 P<0.001	t=3.23 P<0.01	w=11245 P<0.001	w=4627 P<0.001
4.	t=2.07 P<0.05	w=2164 P>0.05	t=3.50 P<0.001		t=0.25 P>0.1	w=966.5 P<0.001	w=2696 P<0.05	w=1740 P>0.05	w=4856 P<0.001	w=5274 P>0.05	t=1.25 P>0.1	t=6.54 P<0.001	t=0.69 P>0.1	t=0.16 P>0.1	w=4696 P<0.001	w=10340 P<0.001	t=0.24 P>0.1	w=569 P<0.001	t=0.66 P>0.1	w=11766 P<0.001	w=4921 P>0.05
5.	t=0.09 P>0.1	w=2143 P>0.05	t=1.32 P>0.1	t=1.81 P<0.1		w=1070 P<0.001	w=2862 P<0.05	w=1847 P>0.05	w=5144 P<0.001	w=5492 P>0.05	t=1.08 P>0.1	t=6.40 P<0.001	t=0.44 P>0.1	t=0.32 P>0.1	w=5003 P<0.001	w=1087 P<0.001	t=0 P>0.1	w=617 P<0.001	t=0.87 P>0.1	w=11988 P<0.001	w=5064 P<0.05
6.	w=7294 P>0.05	w=1735 P>0.05	w=911 P>0.05	w=868.5 P<0.001	w=873 P>0.05		w=1121 P<0.001	w=1003 P<0.001	w=1288 P<0.05	w=1721 P<0.001	w=522.5 P<0.05	w=416.5 P<0.001	w=906 P<0.001	w=444.5 P<0.001	w=3313 P>0.05	w=1731 P>0.1	w=855.5 P<0.001	w=823 P<0.001	t=4.31 P<0.001	w=3261 P<0.001	w=2005 P<0.001
7.	t=4.00 P<0.001	w=2621 P<0.001	t=3.47 P<0.001	t=0.13 P>0.1	t=1.74 P<0.1	w=1105 P<0.01		w=2681 P<0.05	w=2914 P<0.02	w=3947 P<0.05	w=1841 P>0.05	w=1579 P<0.001	w=2547 P>0.05	w=1744 P>0.05	w=5194 P<0.001	w=3499 P<0.001	w=2476 P>0.05	w=2612 P<0.001	t=2.52 P<0.02	w=7425 P<0.001	w=4782 P<0.001
8.	w=1135 P<0.001	w=2335 P<0.001	w=1457 P<0.001	w=1584 P>0.05	w=1548 P<0.05	w=941.5 P<0.001	w=940.5 P>0.05		w=1716 P<0.001	w=2555 P>0.05	w=1135 P>0.05	w=929.5 P<0.001	w=1620 P>0.05	w=1079 P>0.05	w=4869 P<0.001	w=2030 P<0.001	w=1581 P>0.05	w=1728 P<0.001	t=1.26 P>0.1	w=5232 P<0.001	w=3275 P<0.001
9.	t=1.10 P>0.1	w=2991 P>0.05	t=2.69 P<0.01	t=1.25 P>0.1	t=0.89 P>0.1	w=1339 P>0.05	t=1.15 P>0.1	w=2115 P>0.05		w=7124 P<0.001	w=3494 P>0.05	w=3075 P<0.001	w=4647 P<0.001	w=3287 P<0.001	w=5788 P<0.001	w=6508 P>0.05	w=4514 P<0.001	w=4481 P<0.001	t=4.13 P<0.001	w=12129 P<0.001	w=8151 P<0.001
10.	t=2.56 P<0.02	w=3226 P<0.001	t=4.35 P<0.001	t=0.08 P>0.1	t=2.17 P<0.05	w=1600 P<0.001	t=0.24 P>0.1	w=2515 P>0.05	t=1.70 P>0.1		w=4053 P>0.05	w=3645 P<0.001	w=5035 P>0.05	w=3930 P>0.05	w=7251 P<0.001	w=14183 P<0.001	w=4958 P>0.05	w=5272 P<0.001	t=1.55 P>0.1	w=12367 P<0.001	w=8374 P<0.001
11.	t=1.00 P>0.1	w=1514 P>0.05	t=1.87 P<0.1	t=0.34 P>0.1	t=0.90 P>0.1	w=507.5 P>0.05	t=0.66 P>0.1	w=1158 P>0.05	t=0.39 P>0.1	t=0.41 P>0.1		t=4.75 P<0.001	t=0.78 P>0.1	t=1.12 P>0.1	w=3267 P<0.001	w=8097 P<0.02	t=1.07 P>0.1	w=414.5 P<0.001	t=1.65 P>0.1	w=10482 P<0.001	w=4014 P<0.001
12.	t=3.62 P<0.001	w=1320 P<0.001	t=2.59 P<0.02	t=5.37 P<0.001	t=3.48 P<0.001	w=441 P<0.001	t=5.37 P<0.001	w=971 P>0.05	t=4.83 P<0.001	t=6.13 P<0.001	t=3.84 P<0.001		t=6.18 P<0.001	t=5.41 P<0.001	w=2870 P<0.001	w=7474 P<0.001	t=6.36 P<0.001	w=374.5 P<0.001	t=6.35 P<0.001	w=10060 P<0.001	w=3717 P<0.001
13.	t=2.89 P<0.01	w=2222 P<0.001	t=4.41 P<0.001	t=6.76 P<0.001	t=2.55 P<0.02	w=885 P<0.001	t=0.91 P>0.1	w=1667 P>0.05	t=2.16 P<0.05	t=0.83 P>0.1	t=0.82 P>0.1	t=6.13 P<0.001		t=0.62 P>0.1	w=4502 P<0.001	w=10014 P<0.001	t=0.43 P>0.1	w=532 P<0.001	t=1.26 P>0.1	w=11443 P<0.001	w=4702 P<0.01
14.	t=0.71 P>0.1	w=1311 P>0.05	t=1.46 P>0.1	t=0.57 P>0.1	t=0.63 P>0.1	w=406 P>0.05	t=0.50 P>0.1	w=1008 P>0.05	t=0.12 P>0.1	t=0.73 P>0.1	t=0.20 P>0.1	t=3.15 P<0.01	t=1.11 P>0.1		w=3024 P<0.001	w=7040 P<0.001	t=0.33 P>0.1	w=402 P<0.001	t=0.34 P>0.1	w=10448 P>0.05	w=3966 P>0.05
15.	t=1.51 P>0.1	w=2417 P<0.05	t=0.03 P>0.1	t=3.90 P<0.001	t=1.46 P>0.1	w=1065 P>0.05	t=3.90 P<0.001	w=1595 P<0.001	t=3.12 P<0.01	t=5.14 P<0.001	t=1.96 P<0.1	t=2.75 P<0.01	t=4.95 P<0.001	t=1.61 P>0.1		w=7037 P>0.05	w=4332 P<0.001	w=4158 P<0.001	w=3414 P<0.001	w=11909 P<0.001	w=7992 P<0.001
16.	t=2.45 P<0.02	w=3098 P<0.001	t=0.91 P>0.1	t=5.01 P<0.001	t=2.27 P<0.05	w=1512 P>0.05	t=5.06 P<0.001	w=1526 P<0.001	t=4.45 P<0.001	t=6.90 P<0.001	t=2.48 P<0.02	t=2.20 P<0.05	t=6.20 P<0.001	t=2.10 P<0.05	t=1.04 P>0.1		w=7963 P<0.001	w=9650 P<0.001	w=8361 P<0.001	w=21894 P<0.001	w=15562 P<0.001
17.	t=1.87 P<0.1	w=2023 P<0.001	t=3.29 P<0.002	t=0.19 P>0.1	t=1.63 P>0.1	w=777 P<0.001	t=0.70 P>0.1	w=1486 P>0.05	t=1.03 P>0.1	t=0.31 P>0.1	t=0.21 P>0.1	t=5.21 P<0.001	t=0.95 P>0.1	t=0.45 P>0.1	t=3.67 P<0.001	t=4.16 P<0.001		t=3.84 P<0.001	t=0.86 P>0.1	w=11420 P<0.001	w=4674 P<0.05
18.	w=387 P<0.001	w=20091 P<0.001	w=401 P<0.001	w=4353 P<0.001	w=433 P<0.001	w=857.5 P<0.001	w=367.5 P<0.001	w=1820 P<0.001	w=467.5 P<0.001	w=519 P<0.001	w=387 P<0.001	w=355 P<0.001	w=424 P<0.001	w=366 P<0.001	w=403.5 P<0.001	w=403 P<0.001	w=398.5 P<0.001		t=2.70 P<0.01	w=1455 P<0.001	w=925.5 P<0.001
19.	t=2.28 P<0.05	w=1565 P<0.001	t=3.40 P<0.001	t=0.62 P>0.1	t=2.08 P<0.05	w=531 P<0.001	t=0.73 P>0.1	w=1207 P>0.05	t=1.62 P>0.1	t=0.63 P>0.1	t=0.75 P>0.1	t=5.10 P<0.001	t=0.03 P>0.1	t=0.95 P>0.1	t=3.64 P<0.001	t=4.40 P<0.001	t=0.77 P>0.1	w=3861 P<0.001		w=1082 P>0.05	w=4240 P>0.05
20.	w=4436 P<0.001	w=6024 P<0.001	w=7843 P<0.001	w=4255 P<0.001	w=5623 P<0.001	w=2872 P<0.001	w=6194 P<0.001	w=4595 P<0.001	w=10127 P<0.001	w=4057 P<0.001	t=744 P>0.05	w=260 P<0.001	w=2055 P>0.05	w=383 P<0.05	w=1657 P<0.001	w=2437 P<0.001	w=1520 P<0.001	w=833 P<0.001	w=866 P>0.05		w=5078 P<0.05
21.	w=4214 P<0.001	w=4215 P<0.001	w=4394 P<0.001	w=4607 P<0.001	w=4584 P<0.001	w=1911 P<0.001	w=7182 P<0.001	w=3307 P<0.001	w=5224 P<0.001	w=5726 P<0.001	w=4048 P<0.02	w=3778 P<0.001	w=4686 P<0.001	w=3848 P<0.02	w=4475 P<0.001	w=4839 P<0.001	w=4378 P<0.001	w=717 P<0.001	w=6768 P>0.05	w=7265 P>0.05	

Table 5a. Statistical significance of differences between the studied populations. Aperture width - S.

Table 6. Statistical significance of differences between the studied populations. Body whorl height - HA.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21
1.		w=1822 P>0.05	t=3.18 P<0.01	t=5.82 P<0.001	t=2.64 P<0.01	t=4.83 P<0.001	w=2085 P<0.02	w=1268 P<0.001	w=8893 P>0.05	w=4241 P<0.001	t=1.77 P<0.1	t=3.44 P<0.002	t=3.85 P<0.001	t=1.20 P>0.1	w=3686 P>0.05	t=0.39 P>0.1	t=7.99 P<0.001	t=8.56 P<0.001	t=3.02 P<0.01	w=10844 P<0.001	w=3934 P<0.001
2.	w=1971 P>0.05		w=2747 P<0.001	w=2540 P<0.001	w=2420 P<0.01	w=1215 P<0.001	w=2775 P>0.05	w=2385 P<0.001	w=3542 P>0.05	w=3869 P<0.001	w=1508 P>0.05	w=1286 P<0.001	w=2290 P<0.001	w=1359 P>0.05	w=2522 P>0.05	w=3542 P>0.05	w=2147 P<0.001	w=2202 P<0.001	w=1567 P<0.01	w=6504 P<0.001	w=4650 P<0.001
3.	w=2501 P>0.05	w=2518 P>0.05		t=3.38 P<0.002	t=0.28 P>0.1	t=7.90 P<0.001	w=2897 P>0.05	w=1908 P>0.05	w=11362 P<0.001	w=5446 P>0.05	t=0.42 P>0.1	t=5.56 P<0.001	t=0.99 P>0.1	t=0.44 P>0.1	w=5186 P<0.001	t=4.10 P<0.001	t=5.83 P<0.001	t=6.69 P<0.001	t=0.91 P>0.1	w=12361 P<0.001	w=4604 P<0.001
4.	t=3.58 P<0.001	w=2460 P<0.001	w=3139 P<0.001		t=3.28 P<0.002	t=10.05 P<0.001	w=2859 P<0.001	w=1875 P<0.02	w=10692 P<0.001	w=5446 P>0.02	t=2.56 P<0.02	t=7.27 P<0.001	t=2.21 P<0.05	t=1.34 P>0.1	w=4755 P<0.001	t=7.69 P<0.001	t=2.37 P<0.05	t=3.87 P<0.001	t=1.30 P>0.1	w=12092 P>0.05	w=4842 P<0.05
5.	w=1809 P>0.05	w=2198 P>0.05	w=2777 P>0.05	w=2277 P<0.001		t=7.18 P<0.001	w=2664 P>0.05	w=1701 P>0.05	w=10433 P<0.001	w=5080 P>0.05	t=0.21 P>0.1	t=5.19 P<0.001	t=1.15 P>0.1	t=0.57 P>0.1	w=4609 P<0.001	t=1.27 P>0.1	t=5.47 P<0.001	t=6.43 P<0.001	t=1.05 P>0.1	w=11907 P<0.001	w=4416 P<0.001
6.	t=0.85 P>0.1	w=1596 P>0.05	w=2057 P>0.05	t=5.00 P<0.001	w=1489 P>0.05		w=1560 P<0.001	w=897 P<0.001	w=730.5 P<0.001	w=3574 P<0.001	t=5.54 P<0.001	t=0.26 P>0.1	t=8.30 P<0.001	t=5.43 P<0.001	w=2744 P<0.001	t=6.06 P<0.001	t=11.76 P<0.001	t=11.96 P<0.001	t=6.71 P<0.001	w=10101 P<0.001	w=3669 P<0.001
7.	t=0.78 P>0.1	w=2579 P<0.05	w=3158 P>0.05	t=3.14 P<0.01	w=2334 P>0.05	t=1.81 P<0.1		w=2690 P>0.05	w=3658 P<0.001	w=4062 P>0.05	w=1832 P>0.05	w=1618 P<0.001	w=2562 P>0.05	w=1709 P>0.05	w=2728 P<0.001	w=3658 P<0.001	w=2424 P>0.05	w=2674 P<0.001	w=1912 P>0.05	w=6818 P<0.001	w=5110 P<0.001
8.	w=1392 P>0.05	w=2341 P<0.001	w=2927 P>0.05	w=1840 P<0.05	w=2168 P>0.05	w=1136 P<0.001	w=1836 P>0.05		w=2157 P<0.001	w=2670 P>0.05	w=1126 P>0.05	w=952.5 P<0.001	w=1650 P>0.05	w=1042 P>0.05	w=1610 P<0.001	w=2157 P<0.001	w=1550 P>0.05	w=1747 P<0.001	w=1183 P>0.05	w=4651 P<0.001	w=3475 P<0.001
9.	w=3696 P<0.01	w=3457 P<0.001	w=4186 P<0.001	w=4426 P>0.05	w=3168 P<0.001	w=3235 P<0.001	w=4389 P>0.05	w=2469 P>0.05		w=4250 P<0.001	w=8041 P>0.05	w=7482 P<0.001	w=9999 P<0.001	w=7647 P<0.05	w=902.5 P>0.05	w=3747 P>0.05	w=9712 P<0.001	w=9767 P<0.001	w=8202 P<0.001	w=20888 P<0.001	w=16028 P<0.001
10.	t=4.64 P<0.001	w=4190 P<0.001	w=5198 P<0.001	t=1.01 P>0.1	w=3870 P<0.001	t=6.50 P<0.001	t=4.45 P<0.001	w=3151 P<0.001	w=6660 P<0.001		w=3992 P>0.05	w=3656 P<0.001	w=4962 P>0.05	w=3839 P>0.05	w=4878 P<0.001	w=5850 P<0.001	w=4767 P>0.05	w=5323 P<0.001	w=4120 P>0.05	w=10953 P<0.001	w=8768 P<0.001
11.	t=1.91 P<0.1	w=1556 P<0.001	w=2132 P<0.001	t=0.21 P>0.1	w=1491 P<0.05	t=2.54 P<0.02	t=1.50 P>0.1	w=1235 P>0.05	w=3409 P>0.05	t=0.69 P>0.1		t=4.35 P<0.001	t=1.04 P>0.1	t=0.65 P>0.1	w=3173 P<0.05	t=1.76 P<0.1	t=4.16 P<0.001	t=5.21 P<0.001	t=1.04 P>0.1	w=10620 P<0.001	w=3898 P<0.001
12.	t=4.42 P<0.001	w=1282 P<0.001	w=1745 P<0.001	t=8.42 P<0.001	w=1239 P<0.001	t=3.94 P<0.001	t=5.56 P<0.001	w=947.5 P<0.001	w=2920 P<0.001	t=9.86 P<0.001	t=4.94 P<0.001		t=5.97 P<0.001	t=4.47 P<0.001	w=2840 P<0.001	t=4.00 P<0.001	t=8.59 P<0.001	t=9.23 P<0.001	t=5.30 P<0.001	w=10187 P<0.001	w=3700 P<0.001
13.	t=1.90 P<0.1	w=2263 P<0.001	w=2838 P<0.001	t=2.33 P<0.05	w=2046 P>0.05	t=3.23 P<0.002	t=1.20 P>0.1	w=1633 P>0.05	w=4031 P>0.05	t=3.86 P<0.001	t=0.92 P>0.1	t=7.06 P<0.001		t=0.09 P>0.1	w=4390 P<0.001	t=4.82 P<0.001	t=0.08 P>0.1	t=5.64 P<0.001	t=0.24 P>0.1	w=11810 P<0.001	w=4394 P<0.001
14.	t=2.84 P<0.01	w=1422 P<0.001	w=1922 P<0.001	t=0.10 P>0.1	w=1329 P<0.05	t=3.75 P<0.001	t=2.38 P<0.05	w=1097 P>0.05	w=3173 P>0.05	t=0.55 P>0.1	t=0.25 P>0.1	t=6.66 P<0.001	t=1.68 P<0.1		w=2935 P>0.05	t=2.20 P<0.05	t=2.66 P<0.02	t=3.70 P<0.001	t=0.25 P>0.1	w=10470 P>0.05	w=3859 P<0.02
15.	t=1.71 P<0.1	w=2487 P>0.05	w=2972 P<0.001	t=7.09 P<0.001	w=2311 P>0.05	t=0.82 P<0.1	t=3.03 P<0.01	w=1630 P<0.001	w=4041 P<0.001	t=9.71 P<0.001	t=3.11 P<0.01	t=3.81 P<0.001	t=5.18 P<0.001	t=4.75 P<0.001		w=6675 P>0.05	w=4171 P<0.001	w=4205 P<0.001	w=3275 P<0.001	w=10872 P<0.001	w=7975 P<0.001
16.	t=3.10 P<0.002	w=3025 P<0.001	w=3509 P<0.001	t=9.12 P<0.001	w=2813 P<0.001	t=2.40 P<0.02	t=4.72 P<0.001	w=1890 P<0.001	w=4459 P<0.001	t=12.39 P<0.001	t=3.92 P<0.001	t=2.62 P<0.02	t=7.40 P<0.001	t=5.94 P<0.001	t=2.11 P<0.05		t=4.68 P<0.001	t=10.09 P<0.001	t=3.20 P<0.002	w=12523 P<0.001	w=4475 P<0.001
17.	t=1.38 P>0.1	w=2040 P<0.001	w=2594 P>0.05	t=2.36 P<0.05	w=1886 P>0.05	t=2.46 P<0.02	t=0.68 P>0.1	w=1477 P>0.05	w=3798 P>0.05	t=3.55 P<0.001	t=1.09 P>0.1	t=6.08 P<0.001	t=0.41 P>0.1	t=1.83 P<0.1	t=3.77 P<0.001	t=5.44 P<0.001		t=5.67 P<0.001	t=2.94 P<0.01	w=11561 P<0.001	w=4293 P<0.001
18.	w=392.5 P<0.001	w=2213 P<0.001	w=2929 P<0.001	w=449 P<0.001	w=2103 P<0.001	w=365.5 P<0.001	w=456.5 P<0.001	w=1790 P<0.001	w=4491 P<0.001	w=655.5 P<0.001	w=414.5 P<0.001	w=354.5 P<0.001	w=400 P<0.001	w=373 P<0.001	w=393.3 P<0.001	w=408.5 P<0.001	w=406 P<0.001		t=4.10 P<0.001	w=12903 P<0.001	w=5204 P<0.001
19.	t=1.36 P>0.1	w=1537 P>0.05	w=2036 P>0.05	t=1.41 P>0.1	w=1439 P>0.05	t=2.15 P<0.05	t=0.81 P>0.1	w=1150 P>0.05	w=3271 P>0.05	t=2.12 P<0.1	t=0.76 P>0.1	t=5.10 P<0.001	t=0.04 P>0.1	t=1.25 P>0.1	t=2.92 P<0.01	t=4.02 P<0.001	t=0.30 P>0.1	w=380.5 P<0.001		w=10824 P>0.05	w=4017 P<0.001
20.	w=1973 P>0.05	w=5516 P<0.001	w=6391 P<0.001	w=3614 P<0.1	w=4855 P<0.05	w=950 P<0.001	w=3311 P>0.05	w=3730 P>0.05	w=7446 P>0.05	w=8454 P<0.001	w=1347 P>0.05	w=328 P<0.001	w=2685 P>0.05	w=849.5 P>0.05	w=2556 P<0.001	w=3377 P<0.001	w=2188 P>0.05	w=543.5 P<0.001	w=18888 P>0.1		w=17433 P<0.001
21.	w=4464 P<0.001	w=4156 P<0.001	w=5105 P<0.001	w=5231 P>0.05	w=3801 P<0.001	w=4009 P<0.001	w=5034 P<0.001	w=3052 P>0.01	w=6493 P>0.02	746913 P>0.05	w=4278 P>0.05	w=3778 P<0.001	w=4681 P<0.001	w=4020 P>0.05	w=4613 P<0.001	w=4930 P<0.001	w=595.5 P<0.001	w=595.5 P<0.001	w=4115 P>0.05	w=18131 P<0.001	

Table 6a. Statistical significance of differences between the studied populations. Shell diameter -M.

Table 7. Statistical significance of differences between the studied populations. Umbilicus major diameter -P.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21
1.		w=2160 P<0.001	w=2480 P>0.05	t=0.23 P>0.1	t=1.52 P>0.1	t=14.27 P<0.001	t=2.64 P<0.02	t=1.03 P>0.1	w=9796 P<0.001	w=4928 P>0.05	t=1.89 P<0.1	t=2.84 P<0.01	t=1.00 P>0.1	t=0.19 P>0.1	w=4329 P<0.001	t=4.11 P<0.001	t=0.54 P>0.1	w=491.5 P<0.001	t=0.06 P>0.1	w=14156 P<0.001	w=5683 P<0.001
2.	w=2117 P<0.05		w=2871 P<0.001	w=2360 P<0.001	w=2266 P>0.05	w=2139 P<0.001	w=2299 P>0.05	w=2246 P>0.05	w=3497 P>0.05	w=3758 P<0.001	w=1679 P<0.001	w=1556 P>0.05	w=2151 P<0.02	w=1372 P>0.05	w=2346 P<0.05	w=3497 P>0.05	w=2054 P>0.01	w=2226 P<0.001	w=1571 P>0.01	w=2856 P<0.001	w=2860 P>0.05
3.	t=0.60 P>0.1	w=2895 P<0.001		w=2653 P>0.05	w=2542 P<0.05	w=2801 P<0.001	w=2502 P<0.001	w=2480 P>0.05	w=3227 P<0.001	w=3782 P>0.05	w=2148 P<0.001	w=1878 P<0.001	w=2405 P>0.05	w=1804 P>0.05	w=2282 P<0.001	w=3227 P<0.001	w=2390 P>0.05	w=2787 P<0.001	w=1956 P>0.05	w=2470 P<0.001	w=2889 P<0.001
4.	w=1338 P>0.05	w=2358 P<0.001	w=1743 P>0.05		t=1.91 P<0.1	t=16.29 P<0.001	t=3.17 P<0.002	t=1.42 P>0.1	w=10248 P<0.001	w=5198 P>0.05	t=2.42 P<0.02	t=3.29 P<0.002	t=1.41 P>0.1	t=0.07 P>0.1	w=4651 P<0.001	t=5.15 P<0.001	t=0.82 P>0.1	w=474 P<0.001	t=0.14 P>0.1	w=14696 P<0.001	w=6005 P<0.001
5.	t=1.27 P>0.1	w=2246 P>0.05	t=2.22 P<0.05	w=1382 P<0.05		t=16.62 P<0.001	t=1.13 P>0.1	t=0.61 P>0.1	w=10163 P<0.001	w=4989 P>0.05	t=3.73 P<0.001	t=2.49 P<0.02	t=0.71 P>0.1	t=1.10 P>0.1	w=4539 P<0.001	t=2.32 P<0.05	t=0.92 P>0.1	w=460 P<0.001	t=1.43 P>0.1	w=14778 P<0.001	w=5929 P>0.05
6.	w=303 P<0.001	w=2139 P<0.001	w=288 P<0.001	w=16098 P<0.001	w=292.5 P<0.001		t=18.31 P<0.001	t=17.79 P<0.001	w=95938 P<0.001	w=5394 P<0.001	t=8.30 P<0.001	t=16.17 P<0.001	t=19.02 P<0.001	t=7.37 P<0.00	w=40952 P<0.001	t=27.56 P<0.001	t=14.42 P<0.001	w=942.5 P<0.001	t=12.37 P<0.001	w=13254 P<0.001	w=5610 P<0.001
7.	t=3.05 P<0.01	w=2137 P>0.05	t=4.65 P<0.001	w=1260 P<0.001	t=1.75 P<0.1	w=280 P<0.001		t=1.84 P<0.1	w=10270 P<0.001	w=4959 P<0.001	t=4.68 P<0.001	t=0.49 P>0.1	t=2.01 P<0.02	t=1.76 P<0.1	w=4592 P>0.05	t=0.94 P>0.1	t=2.01 P.0.05	w=474.5 P<0.001	t=2.44 P<0.02	w=15029 P<0.001	w=5955 P>0.05
8.	t=0.42 P>0.01	w=2261 P<0.05	t=1.24 P>0.1	w=1388 P>0.05	t=0.97 P>0.1	w=281 P<0.001	t=2.94 P<0.01		w=10059 P<0.001	w=4920 P>0.05	t=3.43 P<0.002	t=2.13 P<0.05	t=0.08 P>0.1	t=0.79 P>0.1	w=4229 P<0.001	t=3.41 P<0.002	t=0.41 P>0.1	w=458.5 P<0.001	t=0.98 P>0.1	w=14722 P<0.001	w=5853 P<0.001
9.	w=3716 P<0.05	w=3837 P<0.001	w=4303 P<0.01	w=2454 P>0.05	w=3764 P<0.001	w=312 P<0.001	w=3543 P<0.001	w=3767 P<0.001		w=9999 P<0.001	w=8442 P<0.001	w=8253 P<0.001	w=9801 P<0.001	w=7675 P<0.05	w=767 P>0.05	w=3742 P>0.05	w=9504 P<0.001	w=9802 P<0.001	w=8213 P<0.001	w=12677 P<0.001	w=12267 P<0.001
10.	w=4686 P>0.05	w=4005 P<0.001	w=5506 P>0.1	w=2421 P>0.05	w=4758 P<0.001	w=292 P<0.001	w=4464 P<0.001	w=4775 P<0.05	w=5363 P>0.05		w=4418 P<0.001	w=3996 P<0.001	w=4800 P>0.05	w=3859 P>0.05	w=4605 P<0.001	w=6059 P<0.001	w=4778 P>0.05	w=5423 P<0.001	w=4127 P>0.05	w=4799 P<0.001	w=5513 P<0.001
11.	t=2.83 P<0.01	w=1689 P<0.001	t=2.51 P<0.02	w=1173 P<0.001	t=2.45 P<0.05	w=302.5 P<0.001	t=5.15 P<0.001	t=3.13 P<0.01	w=3507 P<0.05	w=4392 P<0.001		t=4.73 P<0.001	t=3.47 P<0.001	t=1.47 P>0.1	w=3442 P<0.001	t=5.97 P<0.001	t=2.86 P<0.01	w=471 P<0.05	t=2.23 P<0.05	w=11995 P<0.001	w=4765 P<0.001
12.	t=3.99 P<0.001	w=1430 P<0.001	t=5.52 P<0.001	w=866.5 P<0.001	t=3.70 P<0.001	w=276 P<0.001	t=1.28 P>0.1	t=3.95 P<0.001	w=2934 P<0.001	w=3694 P<0.001	t=5.83 P<0.001		t=2.27 P<0.05	t=1.99 P<0.1	w=3339 P<0.001	t=0.21 P>0.1	t=2.01 P<0.05	w=372 P<0.001	t=2.67 P<0.05	w=12116 P<0.001	w=4563 P>0.1
13.	t=0.64 P>0.1	w=2134 P<0.05	t=1.67 P>0.1	w=1272 P>0.05	t=0.92 P>0.1	w=276 P<0.001	t=3.00 P<0.01	t=0.22 P>0.1	w=3547 P<0.001	w=4525 P<0.001	t=3.36 P<0.002	t=4.04 P<0.001		t=0.76 P>0.1	w=4384 P<0.001	t=3.80 P<0.001	t=0.35 P>0.1	w=411.5 P<0.001	t=0.95 P>0.1	w=14297 P<0.001	w=5681 P<0.001
14.	t=0.30 P>0.1	w=1343 P>0.05	t=0.67 P>0.1	w=885 P>0.05	t=0.45 P>0.1	w=278 P<0.001	t=1.61 P>0.1	t=0.05 P>0.1	w=2996 P>0.05	w=3779 P>0.05	t=2.18 P<0.05	t=2.35 P<0.05	t=0.06 P>0.1		w=2964 P<0.001	t=2.33 P<0.05	t=0.53 P>0.1	w=390.5 P<0.001	t=0.15 P>0.1	w=11064 P<0.001	w=4193 P<0.001
15.	t=2.64 P<0.02	w=2662 P<0.001	t=5.06 P<0.001	w=1391 P<0.001	t=3.04 P<0.01	w=276 P<0.001	t=1.16 P>0.1	t=2.53 P<0.02	w=3637 P<0.001	w=4650 P<0.001	t=4.97 P<0.001	t=2.53 P<0.02	t=2.64 P<0.02	t=1.16 P>0.1		w=6811 P>0.05	w=4149 P<0.001	w=42586 P<0.001	w=3328 P<0.001	w=5796 P<0.001	w=6218 P>0.05
16.	w=9717 P<0.001	w=3656 P>0.05	w=1817 P<0.001	w=1740 P<0.001	w=10094 P<0.001	w=284 P<0.001	w=976 P>0.05	w=10146 P<0.001	w=4145 P<0.001	w=5302 P<0.001	w=8456 P<0.001	w=7939 P>0.05	w=9808 P<0.001	w=7623 P>0.05	w=11486 P>0.05		t=3.27 P<0.002	w=493.5 P<0.001	t=3.62 P<0.001	w=20737 P<0.001	w=8236 P>0.05
17.	w=1180 P>0.05	w=1922 P>0.05	w=1631 P<0.05	w=1167 P<0.05	w=1251 P<0.1	w=276 P<0.001	w=1186 P>0.05	w=1263 P>0.05	w=3394 P<0.001	w=4335 P<0.001	w=929 P<0.001	w=730 P<0.001	w=1156 P>0.05	w=689.5 P>0.05	w=1456 P>0.05	w=9254 P>0.05		w=444 P<0.001	t=0.55 P>0.1	w=13697 P<0.001	w=5488 P<0.001
18.	w=552 P<0.001	w=2199 P<0.001	w=615 P<0.001	w=1543 P<0.001	w=551 P<0.001	w=288 P<0.001	w=511 P<0.001	w=554 P<0.001	w=4119 P<0.001	w=5177 P<0.001	w=538 P>0.05	w=368 P<0.001	w=460 P<0.001	w=392 P<0.001	w=456.5 P<0.001	w=9754 P<0.001	w=1277 P<0.001		w=397 P<0.001	w=13618 P<0.001	w=5776 P<0.001
19.	t=0.80 P>0.1	w=1500 P>0.05	t=1.57 P>0.1	w=946 P>0.05	t=1.04 P>0.1	w=276 P<0.001	t=2.10 P<0.05	t=0.47 P>0.1	w=3070 P<0.001	w=3885 P<0.05	t=3.21 P<0.05	t=3.09 P<0.01	t=0.32 P>0.1	t=0.24 P>0.1	t=1.51 P>0.1	w=8075 P<0.05	w=7785 P>0.05	w=391 P<0.001		w=409.5 P<0.001	w=589 P<0.001
20.	w=14213 P<0.001	w=25908 P<0.001	w=7540 P<0.001	w=1183 P<0.001	w=14905 P<0.001	w=276 P<0.001	w=15071 P<0.001	w=14956 P<0.001	w=3281 P<0.001	w=4080 P<0.001	w=2001 P<0.001	w=11960 P>0.05	w=14459 P<0.001	w=1072 P<0.001	w=17964 P<0.001	w=1520 P<0.001	w=1428 P<0.001	w=418 P<0.001	w=1839 P<0.001		w=18356 P<0.001
21.	w=5602 P<0.001	w=2956 P>0.05	w=7065 P<0.001	w=1577 P<0.001	w=5851 P>0.05	w=278 P<0.001	w=5673 P>0.05	w=5901 P<0.001	w=3935 P<0.001	w=5049 P<0.001	w=4767 P<0.001	w=4315 P<0.05	w=5647 P<0.001	w=4159 P>0.05	w=6759 P>0.05	w=2322 P>0.05	w=1665 P>0.05	w=517 P<0.001	w=4451 P>0.05	w=19232 P<0.001	

Table 7a. Statistical significance of differences between the studied populations. Umbilicus minor diameter -PM.

Table 8. Statistical significance of differences between the studied populations. Height/breadth ratio -H/L.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21
1.		t=0 P>0.1	t=2.35 P<0.05	t=2.24 P<0.05	t=3.23 P<0.01	w=791.5 P>0.05	t=0.99 P>0.1	t=1.00 P>0.1	t=3.72 P<0.01	t=2.66 P<0.01	t=2.58 P<0.02	t=0.69 P>0.1	t=1.12 P>0.1	t=0 P>0.1	t=1.30 P>0.1	t=3.99 P<0.001	t=3.36 P<0.002	t=1.07 P>0.1	t=1.86 P<0.1	t=6.96 P<0.001	t=6.80 P<0.001
2.	t=1.45 P>0.1		t=2.40 P<0.05	t=2.29 P<0.05	t=3.29 P<0.01	w=1051 P<0.001	t=1.00 P>0.1	t=1.02 P>0.1	t=3.82 P<0.001	t=2.74 P<0.01	t=2.62 P<0.02	t=0.70 P>0.1	t=1.15 P>0.1	t=0 P>0.1	t=1.34 P>0.1	t=4.11 P<0.001	t=3.43 P<0.002	t=1.09 P>0.1	t=1.88 P<0.1	t=7.19 P<0.001	t=7.02 P<0.001
3.	t=0 P>0.1	t=1.34 P>0.1		t=0 P>0.1	t=1.18 P>0.1	w=1323 P<0.001	t=1.06 P>0.1	t=1.08 P>0.1	t=7.02 P<0.001	t=6.16 P<0.001	t=4.56 P<0.001	t=2.16 P<0.05	t=1.24 P>0.1	t=0.33 P>0.1	t=1.50 P>0.1	t=1.54 P>0.1	t=1.24 P>0.1	t=1.17 P>0.1	t=0 P>0.1	t=4.91 P<0.001	t=4.76 P<0.001
4.	w=1402 P<0.001	w=1712 P>0.05	w=1848 P<0.001		t=1.12 P>0.1	w=1017 P<0.001	t=1.02 P>0.1	t=1.04 P>0.1	t=6.58 P<0.01	t=5.71 P<0.001	t=4.43 P<0.001	t=2.12 P<0.05	t=1.18 P>0.1	t=1.31 P>0.1	t=1.39 P>0.1	t=1.43 P>0.1	t=1.18 P>0.1	t=1.11 P>0.1	t=0 P>0.1	t=4.51 P<0.001	t=4.39 P<0.001
5.	w=1778 P>0.05	w=2092 P<0.05	w=2285 P>0.05	w=1654 P>0.05		w=1142 P<0.001	t=1.98 P<0.1	t=2.01 P<0.05	t=7.03 P<0.001	t=6.23 P<0.001	t=5.03 P<0.001	t=2.73 P<0.01	t=2.14 P<0.05	t=1.39 P>0.1	t=2.50 P<0.02	t=0 P>0.1	t=0 P>0.1	t=2.04 P<0.05	t=0.90 P>0.1	t=2.59 P<0.02	t=2.54 P<0.02
6.	w=904 P<0.001	w=1136 P<0.001	w=1288 P<0.001	w=958 P<0.001	w=1250 P<0.001		w=1159 P<0.001	w=997 P<0.001	w=1124 P>0.05	w=1287 P>0.05	w=443 P>0.05	w=607.5 P>0.05	w=892.5 P<0.001	w=408 P>0.05	w=1492 P<0.001	w=2606 P<0.001	w=912 P<0.001	w=731 P<0.001	w=571 P<0.001	w=3299 P<0.001	w=2165 P<0.001
7.	t=0 P>0.1	t=1.38 P>0.1	t=0 P>0.1	w=1817 P>0.05	w=2223 P>0.05	w=1233 P<0.001		t=0 P>0.1	t=4.45 P<0.001	t=3.53 P<0.001	t=3.26 P<0.002	t=1.34 P>0.1	t=0 P>0.1	t=1.74 P<0.1	t=0 P>0.1	t=2.35 P<0.05	t=2.05 P<0.05	t=0 P>0.1	t=0.87 P>0.1	t=4.87 P<0.001	t=4.79 P<0.001
8.	t=0 P>0.1	t=1.19 P>0.1	t=0 P>0.1	w=1565 P>0.05	w=1955 P>0.05	w=1013 P<0.001	t=0 P>0.1		t=4.53 P<0.001	t=3.60 P<0.001	t=3.29 P<0.002	t=1.35 P>0.1	t=0 P>0.1	t=0.63 P>0.1	t=0 P>0.1	t=2.40 P<0.05	t=2.08 P<0.05	t=0 P>0.1	t=0.88 P>0.1	t=4.98 P<0.001	t=4.89 P<0.001
9.	w=3678 P<0.01	w=4145 P>0.05	w=4390 P<0.05	w=2547 P<0.01	w=3045 P>0.05	w=1756 P<0.001	w=4319 P>0.05	w=3988 P>0.05		t=1.70 P<0.1	t=0 P>0.1	t=1.47 P>0.1	t=5.27 P<0.001	t=0.63 P>0.1	t=6.56 P<0.001	t=10.20 P<0.001	t=7.90 P<0.001	t=4.92 P<0.001	t=5.15 P<0.001	t=14.56 P<0.001	t=14.10 P<0.001
10.	t=3.47 P<0.001	t=1.67 P>0.1	t=3.11 P<0.01	w=2821 P<0.001	w=3373 P<0.05	w=1968 P<0.001	t=3.24 P<0.05	t=2.67 P<0.01	w=5975 P>0.05		t=0.08 P>0.1	t=0.75 P>0.1	t=4.28 P<0.001	t=2.03 P<0.05	t=5.60 P<0.001	t=9.78 P<0.001	t=7.12 P<0.001	t=2.95 P<0.01	t=4.32 P<0.001	t=15.16 P<0.001	t=14.38 P<0.001
11.	w=352.5 P>0.05	w=457 P>0.05	w=509.5 P>0.05	w=1065 P>0.05	w=1389 P>0.05	w=560 P<0.001	w=494.5 P>0.05	w=411 P>0.05	w=3232 P>0.05	w=8848 P>0.05		t=1.25 P>0.1	t=1.77 P<0.1	t=1.77 P>0.1	t=3.87 P<0.001	t=5.88 P<0.001	t=5.32 P<0.001	t=3.43 P<0.002	t=3.90 P<0.001	t=8.02 P<0.001	t=7.93 P<0.001
12.	t=2.36 P<0.05	t=3.47 P<0.001	t=2.23 P<0.05	w=1049 P>0.05	w=1371 P>0.05	w=616 P<0.05	t=2.28 P<0.05	t=2.06 P<0.05	w=3148 P<0.001	t=5.15 P<0.001	w=215.5 P<0.05		t=1.42 P>0.1	t=0.53 P<0.1	t=1.49 P>0.1	t=3.01 P<0.01	t=2.83 P<0.01	t=1.39 P>0.1	t=1.95 P<0.1	t=4.58 P<0.001	t=4.55 P<0.001
13.	t=0 P>0.1	t=1.32 P>0.1	t=0 P>0.1	w=1499 P>0.05	w=1889 P>0.05	w=947 P<0.001	t=0 P>0.1	t=0 P>0.1	w=3894 P>0.05	t=3.05 P<0.01	w=394 P>0.05	t=2.21 P<0.05		t=0.66 P>0.1	t=0 P>0.1	t=2.86 P<0.01	t=2.35 P<0.05	t=0 P>0.1	t=0.96 P>0.1	t=6.02 P<0.001	t=5.86 P<0.001
14.	t=0 P>0.1	t=0.75 P>0.1	t=0 P>0.1	w=928.5 P>0.05	w=1236 P>0.05	w=439.5 P<0.001	t=0 P>0.1	t=0 P>0.1	w=3030 P>0.05	t=1.57 P>0.1	w=181.5 P>0.05	t=1.4 P>0.1	t=0 P>0.1		t=0.69 P>0.1	t=2.07 P<0.05	t=0.97 P>0.1	t=0.66 P>0.1	t=1.22 P>0.1	t=3.50 P<0.001	t=3.48 P<0.001
15.	t=0 P>0.1	t=1.68 P<0.1	t=0 P>0.1	w=2210 P>0.05	w=2620 P>0.05	w=1593 P<0.001	t=0 P>0.1	t=0 P>0.1	w=4791 P<0.02	t=4.34 P<0.001	w=627 P>0.05	t=2.58 P<0.02	t=0 P>0.1	t=0 P>0.1		t=3.74 P<0.001	t=2.78 P<0.01	t=0 P>0.1	t=1.06 P>0.1	t=8.21 P<0.001	t=7.82 P<0.001
16.	t=1.79 P<0.1	t=3.44 P<0.001	t=1.59 P>0.1	w=2210 P>0.05	w=3148 P>0.05	w=2243 P<0.001	t=1.67 P>0.1	t=1.36 P>0.1	w=5277 P<0.001	t=6.78 P<0.001	w=761.5 P<0.05	t=1.31 P>0.1	t=1.56 P>0.1	t=0.76 P>0.1	t=2.28 P<0.05		t=0 P>0.1	t=2.64 P<0.02	t=1.08 P>0.1	t=4.34 P<0.001	t=4.12 P<0.001
17.	t=1.31 P>0.1	t=2.55 P<0.02	t=1.22 P>0.1	w=1226 P>0.05	w=1567 P>0.05	w=786.5 P<0.01	t=1.26 P>0.1	t=1.11 P>0.1	w=3398 P<0.001	t=4.38 P<0.001	w=278.5 P>0.05	t=1.08 P>0.1	t=1.21 P>0.1	t=0.73 P>0.1	t=1.47 P>0.1	t=0 P>0.1		t=2.23 P<0.05	t=0.96 P>0.1	t=3.00 P<0.01	t=2.93 P<0.01
18.	t=0.98 P>0.1	t=1.94 P<0.1	t=0.94 P>0.1	w=1150 P>0.05	w=1506 P>0.05	w=675.5 P<0.05	t=0.96 P>0.1	t=0.89 P>0.1	w=3371 P<0.001	t=3.12 P<0.01	w=257 P>0.05	t=0.87 P>0.1	t=0.94 P>0.1	t=0.61 P>0.1	t=1.04 P>0.1	t=0 P>0.1	t=0 P>0.1		t=0.92 P>0.1	t=5.51 P<0.001	t=5.39 P<0.001
19.	t=0 P>0.1	t=1.03 P>0.1	t=0 P>0.1	w=1046 P>0.05	w=1369 P>0.05	w=551 P<0.001	t=0 P>0.1	t=0 P>0.1	w=3198 P>0.05	t=2.25 P<0.05	w=224.5 P>0.05	t=1.84 P<0.1	t=0 P>0.1	t=0 P>0.1	t=0 P>0.1	t=1.14 P>0.1	t=0.98 P>0.1	t=0.82 P>0.1		t=3.34 P<0.002	t=3.29 P<0.002
20.	t=0 P>0.1	t=1.72 P<0.1	t=0 P>0.1	w=3450 P>0.05	w=3981 P>0.05	w=2762 P<0.001	t=0 P>0.1	t=0 P>0.1	w=6533 P<0.001	t=4.52 P<0.001	w=1026 P>0.05	t=2.62 P<0.02	t=0 P>0.1	t=0 P>0.1	t=0 P>0.1	t=2.39 P<0.02	t=1.49 P>0.1	t=1.05 P>0.1	t=0 P>0.1		t=0 P>0.1
21.	t=3.33 P<0.002	t=4.82 P<0.001	t=3.01 P<0.01	w=1964 P<0.05	w=2482 P<0.001	w=1609 P<0.01	t=3.13 P<0.01	t=2.61 P<0.02	w=4405 P<0.001	t=8.09 P<0.001	w=519 P<0.02	t=0 P>0.1	t=2.96 P<0.01	t=1.55 P>0.1	t=4.08 P<0.001	t=2.11 P<0.05	t=1.42 P>0.1	t=1.03 P>0.1	t=2.21 P<0.05	t=4.24 P<0.001	

Table 8a. Statistical significance of differences between the studied populations. Relative height of body whorl -HA/H.

Table 9. Statistical significance of differences between the studied populations. Umbilicus minor diameter to its major diameter -PM/P.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21
1.		w=1411 P>0.05	w=1747 P>0.05	w=1344 P>0.05	w=1384 P>0.05	w=837 P<0.001	w=1282 P<0.05	w=1424 P>0.05	w=2216 P>0.05	w=2665 P<0.001	w=998 P<0.05	w=793 P<0.001	w=1302 P>0.05	w=760 P<0.05	w=2221 P<0.05	w=2602 P>0.05	w=1007 P<0.05	w=1029 P<0.05	w=819.5 P>0.05	w=2124 P<0.001	w=2173 P>0.05
2.	w=2301 P<0.001		w=2609 P>0.05	w=2063 P>0.05	w=2095 P>0.05	w=1369 P<0.001	w=1971 P>0.01	w=2152 P>0.05	w=7237 P<0.02	w=3830 P<0.001	w=1582 P<0.001	w=1302 P<0.001	w=1994 P>0.05	w=1265 P>0.05	w=3242 P<0.001	w=3799 P>0.05	w=1592 P<0.02	w=1608 P>0.05	w=1331 P>0.05	w=3124 P<0.001	w=3204 P>0.05
3.	w=2619 P>0.05	w=2889 P<0.001		t=0 P>0.1	t=0.68 P>0.1	w=1296 P<0.001	w=3516 P<0.001	t=0 P>0.1	t=0.82 P>0.1	t=2.58 P<0.02	t=1.46 P>0.1	t=4.75 P<0.001	t=0.66 P>0.1	t=2.68 P<0.02	w=4193 P>0.05	t=1.91 P<0.1	t=3.95 P<0.001	w=1322 P<0.001	t=2.80 P<0.01	w=15947 P<0.001	t=0.90 P>0.1
4.	t=3.71 P<0.001	w=1115 P<0.001	w=1540 P<0.001		t=0.58 P>0.1	w=933.5 P<0.001	w=2766 P<0.001	t=0 P>0.1	t=0.66 P>0.1	t=2.04 P<0.05	t=1.33 P>0.1	t=4.06 P<0.001	t=0.57 P>0.1	t=2.29 P<0.05	w=3643 P>0.05	t=1.45 P>0.1	t=3.22 P<0.01	w=975 P>0.05	t=2.50 P<0.02	w=13828 P<0.001	t=0.70 P>0.1
5.	w=2108 P<0.01	w=2265 P>0.05	w=2429 P<0.05	w=1073 P<0.001		w=1023 P<0.001	w=2904 P<0.05	t=0.58 P>0.1	t=1.38 P>0.1	t=2.87 P<0.01	t=1.81 P<0.1	t=3.61 P<0.001	t=0 P>0.1	t=1.78 P<0.1	w=3588 P<0.001	t=0.77 P>0.1	t=2.70 P<0.01	w=988 P>0.05	t=2.05 P<0.05	w=14176 P<0.001	t=0 P>0.1
6.	t=17.56 P<0.001	w=1093 P<0.001	w=1540 P<0.001	t=21.98 P<0.001	w=1058 P<0.001		w=1030 P>0.05	w=996.5 P<0.001	w=1651 P<0.001	w=1925 P<0.001	w=576.5 P<0.001	w=542 P>0.05	w=896 P<0.001	w=421.5 P>0.05	w=1615 P<0.001	w=2210 P<0.001	w=738 P>0.05	w=676 P<0.05	w=497 P>0.05	w=2158 P>0.05	w=1732 P<0.001
7.	t=5.11 P<0.001	w=2143 P>0.05	w=2259 P<0.001	t=1.73 P<0.1	w=1916 P<0.001	t=21.75 P<0.001		w=2894 P<0.001	w=4307 P<0.001	w=4953 P<0.001	w=2076 P<0.001	w=1837 P<0.05	w=2708 P<0.001	w=1707 P>0.05	w=4327 P<0.001	w=5364 P<0.001	w=2272 P>0.05	w=2250 P>0.05	w=1832 P>0.05	w=4882 P<0.05	w=4438 P<0.001
8.	t=3.85 P<0.001	w=2044 P>0.05	w=2191 P<0.001	t=0 P>0.1	w=1854 P>0.05	t=2.97 P<0.001	t=1.79 P<0.1		t=0.66 P>0.1	t=2.04 P<0.05	t=1.33 P>0.1	t=4.06 P<0.001	t=0.57 P>0.1	t=2.29 P<0.05	w=3728 P>0.05	t=1.45 P>0.1	t=3.22 P<0.002	w=1015 P>0.05	t=2.50 P<0.02	w=14183 P<0.001	t=0.70 P>0.1
9.	t=0 P>0.1	w=3596 P<0.001	w=3745 P>0.05	t=4.16 P<0.001	w=3225 P<0.001	t=19.97 P<0.001	t=5.62 P<0.001	t=4.37 P<0.001		t=1.78 P<0.1	t=0.98 P>0.1	t=5.55 P<0.001	t=1.31 P>0.1	t=3.42 P<0.002	w=5019 P>0.05	t=2.99 P<0.01	t=4.88 P<0.001	w=1697 P<0.001	t=3.41 P<0.002	w=18142 P<0.001	t=1.87 P<0.1
10.	t=4.37 P<0.001	w=2940 P>0.05	w=2732 P<0.001	t=0 P>0.1	w=2559 P>0.05	t=26.71 P<0.001	t=1.99 P<0.1	t=0 P>0.1	t=5.17 P<0.001		t=0 P>0.1	t=7.68 P<0.001	t=2.80 P<0.01	t=4.95 P<0.001	w=5507 P>0.05	t=5.38 P<0.001	t=6.83 P<0.001	w=2061 P<0.001	t=4.65 P<0.001	w=19977 P<0.001	t=4.01 P<0.001
11.	t=1.70 P<0.1	w=1682 P<0.001	w=2122 P<0.05	t=5.21 P<0.001	w=1566 P<0.001	t=14.51 P<0.001	t=6.44 P<0.001	t=5.38 P<0.001	t=1.88 P<0.1	t=5.99 P<0.001		t=4.55 P<0.001	t=1.80 P<0.1	t=3.16 P<0.001	w=3097 P>0.05	t=2.58 P<0.02	t=3.87 P<0.001	w=662 P<0.001	t=3.31 P<0.002	w=11876 P<0.001	t=2.03 P<0.05
12.	t=1.56 P>0.1	w=1745 P<0.05	w=2081 P>0.05	t=1.58 P>0.1	w=1604 P>0.05	t=16.37 P<0.001	t=2.96 P<0.01	t=1.62 P>0.1	t=1.68 P<0.1	t=1.77 P<0.1	t=2.97 P<0.01		t=3.55 P<0.001	t=1.79 P<0.1	w=2662 P<0.001	t=3.85 P<0.001	t=4.35 P<0.001	w=504 P<0.001	t=1.03 P>0.1	w=11213 P>0.05	t=4.46 P<0.001
13.	t=3.58 P<0.001	w=2084 P>0.05	w=2231 P<0.01	t=0 P>0.1	w=1808 P>0.05	t=21.12 P<0.001	t=1.68 P<0.1	t=0 P>0.1	t=4.00 P<0.001	t=0 P>0.1	t=5.05 P<0.001	t=0.25 P>0.1		t=1.75 P<0.1	w=3477 P>0.05	t=0.75 P>0.1	t=2.64 P<0.02	w=915.5 P<0.001	t=2.03 P<0.05	w=13612 P<0.001	t=0 P>0.1
14.	t=1.81 P<0.1	w=1317 P>0.05	w=1718 P>0.05	t=0 P>0.1	w=1237 P>0.05	t=10.13 P<0.001	t=0.89 P>0.1	t=0 P>0.1	t=1.86 P<0.1	t=0 P>0.1	t=2.67 P<0.01	t=0.19 P>0.1	t=0 P>0.1		w=2619 P<0.001	t=1.51 P>0.1	t=0.67 P>0.1	w=446 P>0.05	t=0.51 P>0.1	w=10776 P>0.05	t=2.19 P<0.05
15.	t=7.01 P<0.001	w=2496 P>0.05	w=2238 P<0.001	t=2.42 P<0.02	w=2129 P<0.001	t=31.68 P<0.001	t=0 P>0.1	t=2.58 P<0.02	t=8.54 P<0.001	t=3.32 P<0.002	t=8.44 P<0.001	t=3.69 P<0,001	t=2.28 P<0.05	t=0.95 P>0.1		w=5305 P<0.001	w=2920 P<0.001	w=2939 P<0.001	w=2710 P<0.001	w=4107 P<0.001	w=4752 P<0.01
16.	t=4.51 P<0.001	w=4014 P>0.05	w=3617 P<0.001	t=0 P>0.1	w=3469 P>0.05	t=27.80 P<0.001	t=2.05 P<0.05	t=0 P>0.1	t=5.41 P<0.001	t=0 P>0.1	t=6.15 P<0.001	t=1.80 P<0.1	t=0 P>0.1	t=0 P>0.1	t=3.59 P<0.001		t=2.83 P<0.01	w=2167 P<0.001	t=1.82 P<0.1	w=21315 P<0.001	t=1.16 P>0.1
17.	t=3.18 P<0.01	w=1985 P>0.05	w=2285 P>0.05	t=0 P>0.1	w=1816 P>0.05	t=18.43 P<0.001	t=1.51 P>0.1	t=0 P>0.1	t=3.45 P<0.001	t=0 P>0.1	t=4.53 P<0.001	t=1.40 P>0.1	t=0 P>0.1	t=0 P>0.1	t=1.90 P<0.1	t=0 P>0.1		w=671.5 P>0.05	t=0 P>0.1	w=12407 P>0.05	t=3.58 P<0.001
18.	w=7605 P>0.05	w=2040 P<0.001	w=2428 P>0.05	w=351 P<0.001	w=1879 P<0.001	w=351 P<0.001	w=636.6 P<0.001	w=565 P<0.001	w=1227 P>0.05	w=754 P<0.001	w=604 P>0.05	w=543.5 P>0.05	w=6015 P<0.001	w=4235 P>0.05	w=554 P<0.001	w=1076 P<0.001	w=628.5 P<0.05		w=501.5 P>0.05	w=1764 P>0.05	w=1730 P>0.05
19.	t=1.55 P>0.1	w=1532 P>0.05	w=1879 P>0.05	t=1.57 P>0.1	w=1407 P>0.05	t=16.27 P<0.001	t=2.95 P<0.01	t=1.61 P>0.1	t=1.67 P<0.1	t=1.75 P<0.1	t=2.95 P<0.01	t=0 P>0.1	t=1.53 P>0.1	t=0.87 P>0.1	t=3.66 P<0.001	t=1.79 P<0.1	t=1.40 P>0.1	w=477.5 P>0.05		w=11142 P>0.05	t=2.37 P<0.05
20.	t=14.38 P<0.001	w=2081 P<0.001	w=1775 P<0.001	t=9.93 P<0.001	w=1901 P>0.05	t=40.93 P<0.001	t=6.45 P<0.001	t=10.65 P<0.001	t=17.74 P<0.001	t=14.03 P<0.001	t=15.07 P<0.001	t=9.37 P<0.001	t=9.35 P<0.001	t=3.83 P<0.001	t=12.78 P<0.001	t=15.32 P<0.001	t=7.73 P<0.001	w=410.5 P<0.001	t=9.29 P<0.001		w=18683 P<0.001
21.	t=10.96 P<0.001	w=2083 P<0.001	w=1918 P<0.001	t=6.77 P<0.001	w=1840 P<0.001	t=34.13 P<0.001	t=4.00 P<0.001	t=7.17 P<0.001	t=12.98 P<0.001	t=8.84 P<0.001	t=12.0 P<0.001	t=7.08 P<0.001	t=6.44 P<0.001	t=2.83 P<0.01	t=6.70 P<0.001	t=9.39 P<0.001	t=5.46 P<0.001	w=469 P<0.001	t=7.03 P<0.001	t=3.54 P<0.001	

Table 9a. Statistical significance of differences between the studied populations. Umbilicus major diameter to shell diameter -P/M.

Table 10. Statistical significance of differences between the studied populations. Whorl number -LS.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21
1.		w=1326 P>0.05	w=1621 P>0.05	w=1251 P>0.05	w=1164 P<0.05	w=1192 P<0.001	w=1513 P>0.05	w=1323 P>0.05	w=1811 P>0.05	w=2067 P>0.05	w=955.5 P>0.05	w=1005 P>0.05	w=1225 P>0.05	w=853 P<0.05	w=1629 P>0.02	w=2229 P<0.05	w=1117 P>0.05	w=1207 P>0.05	w=887 P>0.05	w=1751 P<0.001	w=2143 P>0.05
2.			w=2588 P>0.05	w=2075 P>0.05	w=1854 P<0.05	w=1925 P<0.001	w=2438 P>0.05	w=2163 P>0.05	w=2863 P>0.05	w=3279 P>0.05	w=1576 P<0.001	w=1609 P>0.05	w=1978 P>0.105	w=1418 P<0.001	w=2430 P>0.05	w=3409 P>0.05	w=1914 P>0.05	w=1941 P<0.001	w=1475 P>0.05	w=2501 P<0.001	w=3374 P>0.05
3.				w=2497 P>0.05	w=2272 P<0.001	w=2445 P<0.001	w=2877 P>0.05	w=2602 P>0.05	w=3291 P>0.05	w=3729 P>0.05	w=2063 P>0.05	w=2084 P>0.05	w=2426 P>0.105	w=1902 P<0.02	w=2798 P<0.001	w=3727 P<0.001	w=2368 P>0.05	w=2351 P<0.05	w=1931 P>0.05	w=2722 P<0.001	w=3831 P>0.05
4.					w=1286 P<0.001	w=1428 P<0.001	w=1750 P>0.05	w=1541 P>0.05	w=2054 P>0.05	w=2367 P>0.05	w=1138 P>0.02	w=1129 P>0.05	w=1391 P>0.05	w=1014 P<0.001	w=1660 P<0.001	w=2324 P<0.001	w=1360 P>0.05	w=1410 P<0.01	w=1032 P>0.05	w=1583 P<0.001	w=2442 P>0.05
5.						w=1911 P<0.001	w=2627 P<0.001	w=2295 P<0.001	w=3169 P<0.001	w=3592 P<0.001	w=1561 P<0.001	w=1669 P>0.05	w=2113 P<0.001	w=1384 P<0.001	w=2796 P>0.05	w=4105 P>0.05	w=2011 P<0.001	w=1963 P<0.001	w=1496 P<0.001	w=3408 P<0.001	w=3709 P<0.001
6.							w=587 P<0.001	w=505 P<0.001	w=677 P<0.001	w=781 P<0.001	w=418 P>0.05	w=430 P<0.001	w=473 P<0.001	w=378 P>0.05	w=510 P<0.001	w=726 P<0.001	w=466 P<0.001	w=531 P>0.05	w=364 P<0.001	w=495 P<0.001	w=825 P<0.001
7.								w=2542 P>0.05	w=3278 P>0.05	w=3706 P>0.05	w=1964 P<0.05	w=1993 P>0.05	w=2360 P>0.05	w=1796 P<0.001	w=2785 P<0.001	w=3803 P<0.001	w=2296 P>0.05	w=2352 P<0.01	w=1839 P>0.05	w=2846 P<0.001	w=3819 P>0.05
8.									w=2250 P>0.05	w=2579 P>0.05	w=1273 P<0.05	w=1280 P>0.05	w=1553 P>0.05	w=1145 P<0.001	w=1852 P<0.001	w=2585 P<0.001	w=1514 P>0.05	w=1566 P<0.05	w=1168 P>0.05	w=1829 P<0.001	w=2661 P>0.05
9.										w=6138 P>0.05	w=3536 P<0.05	w=3604 P>0.05	w=4160 P>0.05	w=3294 P<0.001	w=4846 P<0.05	w=6400 P>0.05	w=4053 P>0.05	w=4104 P<0.001	w=3378 P>0.05	w=5045 P<0.001	w=6300 P>0.05
10.											w=4296 P>0.05	w=4328 P>0.05	w=4873 P>0.05	w=4043 P<0.01	w=5500 P<0.001	w=6978 P<0.001	w=4790 P>0.05	w=4888 P<0.05	w=4101 P>0.05	w=5488 P<0.001	w=7095 P>0.05
11.												w=242 P>0.05	w=292 P<0.05	w=200 P>0.05	w=350 P<0.001	w=535 P<0.001	w=284.5 P>0.05	w=319.5 P>0.05	w=196.5 P>0.05	w=374.5 P<0.001	w=578.5 P>0.05
12.													w=659.5 P>0.05	w=394 P>0.05	w=888 P>0.05	w=1354 P>0.05	w=624.5 P>0.05	w=628 P>0.05	w=429 P>0.05	w=978 P<0.001	w=1287 P>0.05
13.														w=919 P<0.001	w=1612 P<0.05	w=2291 P<0.05	w=1270 P>0.05	w=1309 P<0.01	w=952 P>0.05	w=1570 P<0.001	w=2330 P>0.05
14.															w=124 P<0.001	w=194.5 P<0.001	w=115.5 P<0.02	w=144 P>0.05	w=77.5 P<0.05	w=103.5 P<0.001	w=247.5 P<0.01
15.																w=6715 P>0.05	w=3928 P<0.01	w=3911 P<0.001	w=3168 P<0.05	w=5283 P<0.001	w=6444 P<0.001
16.																	w=9257 P<0.05	w=9259 P<0.001	w=8022 P>0.05	w=11062 P<0.001	w=13388 P<0.001
17.																		w=1077 P<0.05	w=769.5 P>0.05	w=1334 P<0.001	w=1942 P>0.05
18.																			w=483.5 P<0.05	w=687.5 P<0.001	w=1151 P<0.05
19.																				w=478.5 P<0.001	w=778 P>0.05
20.																					w=20155 P<0.001
21.																					

Table 11. List of characters which differ statistically significantly between each pair of the studied populations

	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21
1.	P,PM, P/M	H,HA, H/L	H,W,S, M,HA, P/M,H/L, HA/H	H,L,W, HA,H/L, P/M,LS	H,W,S,P, HA,PM, P/M,HA/ H,PM/P, LS	H,S,HA, P,PM, PM/P, P/M	H,L,W,S, M,HA, PM,P/M	L,S,M, HA,P, PM, HA/H	H,L,W, S,M,HA, H/L,P/M ,HA/H, PM/P	L,PM, H/L, PM/P	H,L,W,S, M,HA,P, PM,HA/H PM/P	H,L,S,HA P/M	L,M,LS, PM/P	H,P,PM, PM/P, P/M,W, LS	L,S,M,P, PM,H/L, P/M,W, LS	H,L,S,M HA,H/L, PM/P, P/M,W	H,L,W,S, M,HA,P, PM,PM/ P	H,W,S, HA,PM/ P	H,W,S, P,HA,L, PM,H/L, PM/P, P/M,LS	H,L,W,S, M,HA,P, PM,H/L, HA/H, P/M
2.		H,HA,P, PM,H/L, P/M	H,L,W,P, HA,PM, H/L,HA, M,P/M	H,W, HA,H/L, HA/H, LS	H,HA,P, PM,H/L, HA/H,W, PM/P, P/M,LS	H,W,S,M	H,L,W,S, HA,P,M	H,L,M, PM,H/L, PM/P, P/M	H,L,W, S,M,HA, P,PM, H/L, PM/P	L,P,PM, H/L,M, PM/P, LS	H,L,W,S, M,HA,PM ,HA/H, PM/P	H,L,W,S, HA,P, PM,M	L,W,M, LS	W,PM, PM/P,S, P	L,M,S, H/L	H,L,W, HA,H/L, HA/H,P, PM/P,S, M	H,L,W,S, M,HA,P, PM,P/M, M,LS	H,W,S, HA	H,L,W,S ,HA,P,P M,H/L,P M/P,M,P /M,LS	H,L,W,S, M,HA,P, H/L,HA/ H,P/M
3.			H,L,W,S, M,HA, P/M, HA/H	W,PM,L S,P,P/M, LS	H,W,HA, P,PM, H/L,P/M HA/H, PM/P,LS	S,P,PM, PM/P, P/M	L,W,S, P/M	H,L,W, S,M,P, HA,PM, H/L, HA/H	L,W,S, M,H/L, P/M,HA /H,PM/P	L,M,P, PM,H/L, P/M	H,L,W,S, M,HA,P, PM,H/L,H A/H, PM/P	L,W,S,M, P/M	L,W,M,P M/P,LS	H,L,W, M,HA,P, PM,P/M ,LS	H,L,W, M,HA,P, PM,P/M ,LS	H,W,S, HA,PM, PM/P	H,L,W,S, M,HA,P, PM,PM/ P,LS	S,PM/P, W	H,L,W,S ,M,HA,P ,PM,H/L ,PM/P, P/M	H,L,W,S, M,HA,P, PM,H/L, HA/H, P/M
4.				H,L,M, HA,PM, P/M,LS	H,L,W,S, M,HA,P, PM,H/L, HA/H, PM/P,LS	H,L,W,P, M,HA, PM,PM/P	H,L,HA, M	H,W,HA ,H/L,P, HA/H	H,HA, H/L, HA/A, PM/P	H,HA,P, PM,H/L, LS	H,L,W,S, M,HA,P, PM,H/L, PM/P	H,S,M, HA	PM/P,LS	H,L,W, S,M,HA, P,PM, LS	H,L,W, S,M,HA, P,PM, LS	H,L,M, PM, PM/P	H,L,W,S, M,HA,P, PM,P/M, PM/P,LS	H,PM/P	L,W,S,P, PM,H/L, PM/P, LS	H,S, HA,P,PM H/L,HA/ H
5.					H,W,HA, P,PM, H/L,P/M, HA/H, PM/P,LS	H/L,LS, W,PM/P, P/M	L,S,H/L, LS	L,W,M, P,PM, HA,H/L, P/M,LS	L,S,M, PM,H/L, HA/H, PM/P, LS	L,P,PM, H/L,M, P/M,LS	H,L,W,S, M,HA,P, PM,H/L, PM/P, HA/H	L,S,H/L, LS	L,M,LS	H,W, HA,PM, P,H/L, PM/P, P/M	L,W,S, M,P,PM	H,L,HA, PM/P,LS	H,L,W,S, M,HA,P, PM,H/L, P/M,LS	S,PM/P, LS	H,L,W,S ,HA,P,P M,H/L,P M/P,M,L S	H,L,W,S, M,HA, H/L,P/M LS,HA/H
6.						H,W,S, HA,P,PM P/M,H/L, HA/H,LS	H,L,W,S, M,HA,P, PM,HA/ H,M, H/L,P/M, PM/P,LS	H,L,M,H A,P, PM,P/M, HA/H,P M/P,LS, W,HA/H	H,L,W,S ,M,HA,P ,PM,P/ M,HA/H ,PM/P, LS	H,W,M HA,P, PM,P/M HA/H, PM/P	L,W,M,P, PM,P/M, HA/H,LS, S	H,L,W,S, M,HA,P, PM,HA/H ,PM/P,H/ L,P/M,LS	H,L,W, M,HA,P, PM,P/M, HA/H	H,HA,P, PM,H/L, HA/H, PM/P, LS	H,L,M,P HA,PM, HA/H,P M/P,H/L P/M,LS, S	H,L,W,S, M,HA,P, PM,H/L, HA/H, P/M,LS	H,L,W,S, M,HA,P, PM,HA/ H,PM/P, H/L,P/M	H,W,S, M,HA,P, PM,H/L, P/M, HA/H, LS	H,L,W,S ,M,HA,P M,P,HA/ H,H/L,P/ M,LS	H,L,W,S, M,HA,P, PM,HA/ H,H/L,P/ M,PM/P, LS
7.							PM,W, PM/P	L,W,P,P M,H/L, PM/P, HA,P/M, LS	L,M,P, PM,H/L, HA/H, PM/P,W	P,PM, H/L,P/M ,PM/P, LS	H,L,W,S, M,HA, HA/H P/M,PM/P	P,PM, PM/P	M,LS	H,L,W,S ,M,HA, PM/P, LS	L,W,S, M,HA, H/L,P/M ,PM/P, LS	H,P,H/L	H,L,W,S, M,HA,P, PM,P/M, LS	W,P,PM, P/M,W	H,W,S, HA,PM, P,H/L, P/M,PM/ P,LS	H,L,W,S, M,HA, H/L,P/M, HA/H, PM/P
8.								H,W,P,H A,PM, H/L,P/M	L,M, PM,H/L, HA/H, PM/P	PM,H/L, P/M,LS	H,L,W, HA,P,PM, HA/H PM/P,M		LS	L,W,S, M,HA,P M,P,P/ M,LS	H,L,W, S,M,HA, P,PM, H/L,LS	H/L, PM/P	H,L,W,S, M,HA,P, PM,P/M, LS	PM/P	H,W,S,P M,P,PM, PM/P,H/ L,P/M,L S, HA	H,W,S,L, HA,P,PM ,H/L,P/M ,HA/H,M
9.									H,L,W, M,HA,P, P/M	P,PM,LS	H,L,W,S, M,HA,PM ,P,HA/H, PM/P	H,W,S,P, HA,PM, H/L,P/M, PM/P	W,PM/P, HA,P,LS	L,W,S, M,PM, HA/H, H/L,P/M ,LS	L,S,M,P M,H/L,P /M,HA/ H,PM/P	H,W, HA,P, PM,H/L, P/M, HA/H, PM/P	H,L,W,S, M,HA,P, PM,H/L, HA/H,P M/P,LS	H,W,PM ,P,H/L, PM/P, HA	H,L,W,S HA,PM, P,HA/H, H/L,P/M ,PM/P, LS	H,W,S,P, HA,PM, H/L,P/M, HA/H,M

10.										L,P,PM, P/M	H,L,W,S, M,HA,PM ,P,HA/H, PM/P	L,M,PM, H/L, HA/H, PM/P	H/L, PM/P,LS	H,L,W,S PM,M, HA,H/L, PM/P,P, LS	H,L,W, S,M,HA, P,PM, H/L HA/H, LS	H,L,M,P M,H/L, HA/H, PM/P	H,L,W,S, M,HA,P, PM,HA/ H,PM/P, LS,H/L, P/M	L,PM, H/L, HA/H, PM/P	H,L,W, S,M,HA, P,PM, H/L,HA/ H,PM/P, P/M,LS	H,W,S, HA,P,PM H/L,P/M, HA/H, PM/P
11.											H,L,W,S, M,HA,PM ,P,HA/H, PM/P,H/L	P,PM, P/M,LS	PM,P/M, PM/P	L,W,M, P,PM,H/ L,P/M,L S,HA	L,S,M,P, PM,H/L, PM/P, P/M,W, LS	H,HA,P M,P,PM/ P,H/L,P/ M,HA/H	H,L,W,S, M,HA, H/L,P, PM/P	P,PM, H/L,P/M ,PM/P	H,W, HA,P, PM,H/L, P/M, PM/P,LS	H,W,S,P, HA,PM, H/L,P/M, PM/P, HA/H
12.												H,L,W,S, M,HA,P, PM, HA/H, PM/P	H,L,W, S,M,HA, PM	H,L,W, S,M,HA, P,PM,P/ M,HA/H ,PM/P	H,W,S, M,HA, H/L, HA/H	H,L,W, S,M,HA, P,PM, H/L, PM/P	H,L,W,S, M,HA,P, PM, PM/P	H,L,W, S,M,HA, P,PM	H,L,W, S,M,HA, P,H/L,P/ M,HA/H ,LS	H,L,W,S, M,HA, PM,H/L, PM/P, P/M
13.													LS	H,L,W, S,M,HA, P,PM, P/M,LS	H,L,W, S,M,HA, P,PM, H/L,LS	H/L, PM/P	H,L,W,S, M,HA,P, PM,P/M, PM/P,LS	PM/P	H,W,P, HA,H/L, PM/P, P/M,LS	H,L,W,S, M,P,PM, H/L, HA/H, P/M,HA
14.														H,L,W, M,HA P,PM/P, LS	L,W,S, M,HA,P, H/L,LS	HA,LS	H,L,W,S, M,HA,P, PM	LS	S,PM,P, H/L, P/M,LS	H,L,S,P, HA,H/L, P/M, PM/P,LS
15.															L,M,H/L ,HA/H, PM/P, P/M	H,L,W,S, P,M,HA H/L, PM/P,LS	H,L,W,S, M,HA,P, PM,P/M, PM/P,LS	H,L,W, S,M,HA, P,PM/P, P/M,LS	H,L,W, S,M,HA, P,PM,H/ L,PM/P, P/M,LS	H,L,W,S, M,HA, H/L,P/M, HA/H, PM/P,LS
16.																H,L,W, S,M,HA, P,PM/P, LS	H,L,W,S, M,HA,P, PM,H/L, P/M, PM/P,LS	H,L,W, S,M,HA, P,PM	H,L,W, S,M,HA, P,PM,H/ L,HA/H, PM/P,LS	H,L,W,S, M,HA, H/L,P/M, HA/H, LS
17.																	H,L,W,S, M,HA,P, PM ,H/L, LS	HA	W,S,PM, P,H/L, P/M,LS, HA	H,L,W,S, M,PM/P, H/L,P/M, HA,P
18.																		H,L,W, S,M,HA, P,PM,LS	H,L,S,M, HA,PM, P,H/L,P/ M,LS,W	H,L,W,S, M,HA,P, PM,H/L, P/M,LS
19.																			P,PM, H/L,P/M LS	H,HA,P M,P,HA/ H,PM/P, H/L,P/M
20.																				H,L,W,M ,HA,P,P M,HA/H, PM/P, P/M,LS

area except the Carpathians (RIEDEL 1988); in the Sudetes it reaches 800 m a.s.l. (WIKTOR and WIKTOR 1968). It inhabits a variety of habitats of varying humidity, from dry meadows and anthropogenic habitats to forest edges. There are no data on the area occupied by populations of the species, but in a mosaic, fragmented habitat populations are probably small and to a large degree isolated.

MATERIAL AND METHODS

Twenty one populations from various localities in Poland were examined (fig.1). The material, comprising 1490 shells, is deposited in the following collections: Museum of Natural History, Wrocław University, Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw, and Department of General Zoology, A. Mickiewicz University, Poznań.

The following measurements were taken: shell height, shell breadth, body whorl height, aperture height, aperture breadth, shell diameter, umbilicus major diameter, umbilicus minor diameter. In order to characterize shell proportions the following coefficients were used: a/ height/breadth ratio (H/L), b/ relative height of body whorl, i.e. ratio of the body whorl height to the shell height (HA/H); c/ umbilicus relative diameter, i.e. ratio of umbilicus major diameter to shell diameter (P/M); d/ ratio of umbilicus major to its minor diameter (PM/P). The degree of "hairiness" of the shell was estimated according to the three-degree scale: 0 - no hairs, 1 - hairs partly damaged, 3 - hairs complete. Whorls were counted according to EHRMANN's (1933) method.

For each parameter and each population arithmetic mean, standard deviation (SD), variability coefficient (V) and variability range were calculated, considering juvenile and adult shells separately, and all shells jointly (tabs.1-3). The data were statistically analysed with respect to the significance of differences between populations (Student t-test and Mann-Whitney test). For parameters suspected of allometric growth Pearson correlation coefficient (r) and regression equation parameters were calculated.

RESULTS

Almost each of the studied populations differs statistically significantly from the remaining populations in at least one character. Most populations differ in shell size (tabs 4-7) and proportions (tabs 8-9), and in the number of whorls (tab.10). Characters showing statistically significant inter-population differences are summarized in table 11. Some pairs of populations differ in all or nearly all the parameters examined, e.g. those from Muszkowice, Parzynów and Błądziszki. Likewise, populations from Chełm and Staw differ from the remaining ones in such characters as shell height, body whorl height or height/breadth ratio.

The least variable characters are: aperture height and breadth, relative height of body whorl and umbilicus relative diameter.

The similarity dendrogram (fig. 2), based on mean values of all the studied characters, confirms the results presented in table 12. Populations from Muszkowice, Parzynów and Błądziszki distinctly depart from the remaining ones. Shells from the first two populations differ most of all in higher values of shell height and breadth (mean values of these characters for specimens from Muszkowice and Parzynów amount to 5.1 and 7.6 mm, and 5.2 and 8.1 mm, respectively). Their height/breadth ratio and relative height of body whorl are also higher. Besides, shells from Muszkowice are characterized by ca. twice narrower umbilicus, while those from Błądziszki are smaller than the shells from the remaining populations (height, breadth and diameter). Figs 3-8 represent shells of specimens from those populations, and a representative of a "typical" population.

None of the studied characters is correlated with latitude; some are correlated with longitude (tab. 12). This pertains to shell height, body whorl height and aperture breadth. Shell proportions, expressed as height/breadth ratio, change depending on longitude - the more eastwards the locality is situated, the more flat the shell (fig.9).

Table 12. Shell parameters correlated with longitude

parameter	equation	r	df	P
shell height	y=56.197-0.562x	-0.0495	19	0.023
body whorl height	y=44.882-0.431x	-0.4402	19	0.045
aperture breadth	y=42.740-0.386x	-0.4684	19	0.030
height/breadth ratio	y=0.732-0.005x	-0.6117	19	0.003

Analysis of the way of growth of *T. hispida*, consisting in calculating correlation between the number of whorls and the coefficients, describing shell propotions indicates, that the growth of juvenile snails is allometric only in some populations (Błądziszki, Muszkowice, Oława, Gliwice, Węgierki), whereas in others it is isometric. The results are summarized in table 13. Figure 10 represents changes in the height/breadth ratio, depending on the number of whorls, in one of such populations. In some populations the relative height of body whorl is correlated with the number of whorls (fig. 11); the same is true of the umbilicus relative diameter (fig. 12).

Table 13. Allometric growth of various shells parameters, depending on the number of whorls

population	parameter	equation	r	df	P
Błądziszki	h/b r.	y=0.427+0.036x	0.306	62	0.014
Gliwice	h/b r.	y=0.498+0.021x	0.237	138	0.005
Muszkowice	h/b r.	y=0.215+0.092x	0.522	37	0.001
Oława	h/b r.	y=0.539+0.018x	0.178	187	0.014
Węgierki	h/b r.	y=0.403+0.049x	0.357	84	0.001

population	parameter	equation	r	df	P
Chełm	u.r.d.	y=0.004+0.048x	0.503	26	0.006
Gliwice	u.r.d.	y=0.033+0.034x	0.540	138	0.001
Gołdap2	u.r.d.	y=0.040+0.036x	0.330	38	0.037
Jarocin2	u.r.d.	y=0.065+0.034x	0.543	94	0.001
Rąbczyn	u.r.d.	y=-0.098+0.066x	0.757	17	0.001
Staw	u.r.d.	y=0.144+0.021x	0.252	60	0.05
Błądziszki	r.h.b.w.	y=1.035-0.484x	-0.331	62	0.007
Chyby	r.h.b.w.	y=1.092-0.056x	-0.540	16	0.021
Jarocin1	r.h.b.w.	y=1.016-0.040x	-0.439	44	0.002
Jarocin2	r.h.b.w.	y=1.038-0.047x	-0.463	94	0.001
Oława	r.h.b.w.	y=0.933-0.023x	-0.229	187	0.001
Parzynów	r.h.b.w.	y=1.075-0.056x	-0.644	22	0.001
Poznań	r.h.b.w.	y=1.122-0.061x	-0.624	11	0.02
Rąbczyn	r.h.b.w.	y=1.201-0.076x	-0.508	17	0.026
Staw	r.h.b.w.	y=1.064-0.046x	-0.428	60	0.001
Stęszew	r.h.b.w.	y=1.063-0.049x	-0.648	53	0.001
Węgierki	r.h.b.w.	y=1.142-0.068x	-0.500	84	0.001

h/b r.-height/breadth ratio, u.r.d.-umbilicus relative diameter, r.h.b.w.-relative height of body whorl

When analysing the degree of "hairiness", it can be seen that they hairs are lost with age. Shells of three populations were divided in three age classes, and the percentage of "hairy" shells was as follws:
Staw: juevnile - 100%, subadult - 72.1%, adult - 47.7%
Oława: juvenile - 93.1%, subadult - 69%, adult - 14.3%
Gliwice: juvenile - 80%, subadult - 63.8%, adult - 11.1%.

DISCUSSION

FORCART (1965) pointed out the difficulties involved in identification of a group of closely related species of the subgenus *Trichia s. str.*: *T. hispida* (L.), *T. concinna* (JEFFREYS), *T. plebeia* (DRAPARNAUD), *T. suberecta* (CLESSIN), *T. striolata* (HARTMANN) and *T. caelata* (STUDER). RIEDEL (1988) listed 7 species of *Trichia* from Poland, two of which belong to that group. Of these, *T. plebeia* has few localities in the Sudetes (RIEDEL 1988), and distinguishing it from *T. hispida* is not very difficult (FORCART 1965). *T. concinna*, whose occurrence in Poland is doubtful (RIEDEL 1988) and the shell variability range poorly studied, was listed by FORCART (1965) from two localities near Warsaw and Bydgoszcz. According to that author it differs from *T. hispida* in a more flattened shell with wider umblicus and twice shorter penial flagellum. SHIELYKO (1978) presented a description and figure of the reproductive system of *T. concinna*, based on 7 examined specimens from two populations in the former Czechoslovakia. Both the description and figure correspond to the characters of *T. hispida*, but the shell according to that author is flattened, and the umblicus wide.

A wide distribution of *T. hispida* and the fact that the species inhabits a variety of habitats, suggest a possibility of considerable individual and inter-population variability. Such a variation of the shell size and proportions was actually observed (cf. tabs 1-3). This may result partly from the degree of isolation of particular populations. There were no systematic studies on the areas occupied by snail populations; on the other hand *T. hispida*, though common, occurs very locally (own, unpublished observations). No doubt some of the observed differences between popualtions may have ecological reasons (direct effect of habitat factors), but the habitat data are too incomplete to correlate them with shell variation.

Snails from some of the studied populations have flattened shells with a broad umbilicus (Gołdap1, Gołdap2, Staw, Chełm, Poznań) which might correspond to the description of *T. concinna* given by FORCART (1965) and SHILEYKO (1978). The first four of these populations, in which the characetrs mentioned were the strongest expressed, come from the eastern fringes of Poland - an area situated outside the distribution range of *T. concinna* (FORCART 1965). All the anatomically examined specimens from such populations (a total of 35 specimens from 2 populations) had penes provided with long flagella. With respect to other characters of the reproductive system they did not depart from the snails which in their shell morphology corresponded to the description of *T. hispida*. On the other hand, the shell variability range in *T. concinna* is unknown. FORCART (1965) did not list the number of specimens at his disposal, but in his shell description he did not consider any variation.

Shells of *T. hispida* from some localities are strongly flattened, thus resembling those of *T. concinna*. The structure of the reproductive system of the specimens described by SHILEYKO (1978) as *T. concinna* did not depart from such a structure in *T. hispida*, and the specimens dissected by that author came from an area where both species are likely to occur (FORCART 1965). These facts indicate that SHILEYKO (1978) could actually deal with specimens of *T. hispida* of strongly flattened shells. The problem of diagnostic characters, variability and distribution borders of both those species requires a more detailed study.

Shell characters in *T. hispida* that display the lowest inter- and intrapopulation variability are: aperture height and breadth, realtive height of body whorl, and umbilicus realtive diameter (cf. tabs 5, 8a, 9a). The shell shape is rather constant, except for the three populations which distinctly depart from the "typical" pattern (cf. figs 3-8). Considering the shell variability in *T. hispida* on the one hand, and its similarity to *T. concinna* on the other (FORCART 1965), it appears that at least until shell variability in *T. concinna* is studied in detail, the only character enabling the identification of both those species will be the structure of their male genitalia.

None of the studied characters is correlated with latitude. The correlation of shell proportions with longitude indicates a geographic trend. A similar dependence was found by PAUL (1975) for populations of *Columella edentula* from the British Isles;

however, he found no correlation with any habitat factor. The only factor that changes gradually with longitude in Poland is an eastwards increasing aridisation (STARKEL 1991). The problem requires further studies, which would include populations from the entire distribution area.

Allometric growth was previously studied only in a few species, and only those in which juvenile shells distinctly differ in their proportions from the adults. Growth regression equations were calculated for three species of *Columella* (POKRYSZKO 1987) and for *Carychium tridentatum* (BULMAN 1990). Shell proportions in juvenile and adult *T. hispida* do not differ in any obvious manner, but in some populations they actually change with growth (cf. tab. 13 and figs 10-12). The most often found dependence in the studied populations was a negative correaltion between the relative height of body whorl and the number of whorls. At the same time it was the strongest correlation (the highest values of Pearson's coefficient, cf. tab.13). Such a change in the shell proportions with growth means that in adult shells the spire is more elevated, compared with specimens from populations displaying an isometric growth. It was observed in 11 of the studied populations (Błądziszki, Chyby, Jarocin1, Jarocin2, Oława, Parzynów, Poznań, Rąbczyn, Staw, Stęszew and Węgierki). Nine of them come from the western part of Poland. Such a change in shell proportions is compatible with the above presented negative correlation between the longitude and the height/beradth ratio (cf. fig.9). At the same time I found no correlation between the longitude and the number of whorls; the mean whorl number in the eastern and western populations is very similar. On this basis it could be conjectured that the higher values of the height/breadth ratio (more elevated spire), observed in the adult shells from western populations, result from their allometric growth.

Variation in the shell "hairiness" was studied in three of the populations. It is known that the hairs are progressively lost with age (e.g. URBAŃSKI 1957, FORCART 1965), but systematic studies on the problem are lacking. The three populations studied in this respect differ considerably. In two of them (Oława, Gliwice) almost all the adult specimens, a considerable proportion of subadults and a part of juveniles were devoid of hairs. In the third one (Staw) nearly 50% adults and all the juveniles were hairy. This indicates that besides the age, the degree of "hairiness" depends also on some other factor(s).

ACKNOWNLEDGMENTS

I wish to express my sincere gratitude to Dr. Beata M. POKRYSZKO, Museum of Natural History, Wrocław University for the help, encouragment and translating the text into English. I am also grateful to Mr Tomasz KOKUREWICZ, M. Sc. for his help with statistical analysis.

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