

**Table S1a.** The quantification of urbanisation indicators and estimation of urbanisation index value on ten sandy beaches in June.

June	Baekssajang	Sambong	Giji	Anmyeon	Batkkae	Bangpo	Kkotjji	Saetppyol	Jangsampo	Baramarae
Proximity to urban centers	3	2	1	1	2	3	3	1	1	0
Buildings on the sand	2	2	2	2	2	3	4	2	2	2
Cleaning of the beach	0	0	0	0	0	0	1	0	0	0
Solid waste in the sand	1	2	2	2	2	3	3	2	2	5
Vehicles traffic on the sand	0	0	0	0	2	0	3	2	3	3
Quality of the night sky	2	2	2	2	2	4	5	2	2	2
Frequency of visitors	2	3	2	2	2	3	5	2	2	3
Urbanization index value	0.286	0.314	0.257	0.257	0.34	0.457	0.686	0.314	0.343	0.429

**Table S1b.** The quantification of urbanisation indicators and estimation of urbanisation index value on ten sandy beaches in September.

September	Baekssajang	Sambong	Giji	Anmyeon	Batkkae	Bangpo	Kkotjji	Saetpppyol	Jangsampo	Baramarae
Proximity to urban centers	3	2	1	1	2	3	3	1	1	0
Buildings on the sand	2	2	2	2	2	3	4	2	2	2
Cleaning of the beach	0	0	0	0	0	0	1	0	0	0
Solid waste in the sand	2	3	2	2	3	4	4	3	3	5
Vehicles traffic on the sand	0	0	0	0	2	0	3	2	3	3
Quality of the night sky	2	2	2	2	2	4	5	2	2	2
Frequency of visitors	2	3	2	2	2	3	5	2	2	3
Urbanization index value	0.314	0.343	0.257	0.257	0.371	0.486	0.714	0.371	0.371	0.429