Data Article

Data on coastal dunes vulnerability of eleven microtidal wave-dominated beaches of Sardinia (Italy, western Mediterranean)

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**A B S T R A C T**

This article contains data about the values of the Dune Vulnerability Index (DVI) and the Partial Index Vulnerability (IVp) of eleven coastal dune systems located in Sardinia (Italy, western Mediterranean). Specifically, we present the values of 59 variables that summarize the condition of the studied dune systems, clustered in five groups: Geomorphological Condition (GCD), Marine Influence (MI), Aeolian Influence (AI), Vegetation Condition (VC), and Human Effects (HE). Data were collected during numerous field surveys and using aerial-photos. This dataset can be useful to evaluate the coastal dune vulnerability of several Sardinian beaches in order to drive local coastal managers towards an efficient management.

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Data

This study summarizes the condition of eleven coastal dunes systems of Sardinia, Italy (Fig. 1) according to the Coastal Dune Vulnerability Index (DVI [1,2]). These coastal dune systems belong to the coastal environments of Porto Pino, Piscinnì, Chia (Sa Colonia, Porto Campana, Su Giudeu), Solanas, Villasimius (Porto Giunco, Simius, Is Traias, Punta Molentis) and Budoni (Fig. 1), important tourist destinations of semi-pristine nature that are facing environmental pressures common to many coastal Mediterranean settings. The main environmental features of these beaches are summarized in Table 1.

These beaches were studied with an integrated, morphodynamic sea-land approach [3,4]. For a detailed description and discussion of the studied sites see Refs.[5–9]. The sedimentary regime of these beaches is mainly controlled by the wind-induced currents and the widespread presence of the Posidonia oceanica meadows. This seagrass plays a crucial role in the Mediterranean ecosystems contributing to the carbonate sediment production of the beaches [10].

Dune vulnerability is defined as the loss of capacity of a dune system to return to its original dynamic equilibrium after system displacement. The DVI is based on a range of parameters derived from coastal and dune geomorphology, but also includes the identification of sediment sources, transport and sedimentation pathways, the assessment of vegetation cover and the associated human impact. Table 1 shows partial and total vulnerability indices for each sampling site, whereas Tables 2–6 report the variables considered in the DVI classification procedure and the relative scores.

Experimental design, materials, and methods

Researchers collected several data by numerous field surveys and using aerial-photos that were analyzed in order to evaluate the DVI of eleven Sardinian dune systems. The aerial-photos analysis
Fig. 1. Study Area. Map with the location of the studied beaches in Sardinia. Image from Google Maps, modified (Coordinates: WGS84/UTM32 N). A: Porto Pino, B: Piscinnì, C: Chia, C1: Su Giudeu, C2: Porto Campana, C3: Sa Colonia, D: Solanas, E: Villasimius, E1: Porto Giunco, E2: Simius, E3: Is Traias, E4: Punta Molentis, F: Budoni.
was carried out using the orthophoto mosaics (from 2008 to 2016) of the SITR (Sistema Informativo Territoriale Regionale) of the "Regione Autonoma della Sardegna — RAS". The data directory is made available through a dedicated WMS service, which can be consulted using a desktop GIS client. Additional information about field surveys and aerial-photos interpretation can be found in Supplementary Material (Appendix 1). The DVI [1,2] is based on 59 variables that summarize the condition of the system according to Geomorphological Condition (GCD), Marine Influence (MI), Aeolian Influence (AI), Vegetation Condition (VC), and Human Effects (HE). These variables allow to quantify the dune system vulnerability through the calculation of the Partial Index Vulnerability (IVp) for each group of variables. Each IVp is calculated by summing all values within each variable group. In detail, each variable was transformed into quantitative value \( v \) by rating it independently within a rating scale, ranging from 0 (lowest) to 4 (highest). Each IVp was calculated by summing all values assigned to every variable and then the sum of the ranked variables for each group was divided by the sum of the maximum ranking attainable within each group, according to the following Formula (1):

\[
IVp = \frac{\sum_{k=1}^{n} v_k}{4^n/n}
\]

where: \( v_k \) is the value assigned to each variable ranging from 0 (lowest) to 4 (highest), \( n \) is the number of considered variables within each group and 4 is the highest value attainable within each variable.

The DVI is calculated as the average of the five partial vulnerability indices (IVp), according to the following Formula (2):

\[
DVI = (\text{GCD} + \text{MI} + \text{AI} + \text{VC} + \text{HE}) / 5
\]

The DVI and each IVp index range between 0 (low vulnerability) and 1 (high vulnerability). Higher values of DVI correspond to a lower ability of the dune system to withstand further interferences. Four main groups of coastal dune conditions were identified [1,2], based on different vulnerability scale: low (DVI < 0.25), from low to medium (between 0.25 and 0.5), from medium to high (between 0.5 and 0.6) and high vulnerability (DVI > 0.6).

### Table 1

Beach characteristics, DVI and IVp values of the study areas.

| Station     | Location | Coordinates         | Average beach width (m) | Average beach length (m) | DVI | IVp GCD | IVp MI | IVp AI | IVp VC | IVp HE |
|-------------|----------|---------------------|-------------------------|--------------------------|-----|--------|-------|-------|-------|-------|
| Porto Pino  | SW coast | 466836 E, 4311606 N | 50–70                   | 500                      | 0.44| 0.81   | 0.33  | 0.38  | 0.25  | 0.41  |
| Piscinni    | SW coast | 481027 E, 4307157 N | 30                      | 250                      | 0.54| 0.75   | 0.44  | 0.59  | 0.53  | 0.41  |
| Su Giudeu   | S coast  | 488393 E, 4304132 N | 50–60                   | 1300                     | 0.50| 0.75   | 0.34  | 0.44  | 0.45  | 0.50  |
| Porto Campana| S coast  | 488840 E, 4304483 N | 30                      | 500                      | 0.53| 0.67   | 0.33  | 0.61  | 0.57  | 0.47  |
| Sa Colonia  | S coast  | 489450 E, 4305096 N | 30–40                   | 700                      | 0.57| 0.75   | 0.42  | 0.52  | 0.62  | 0.54  |
| Solanas     | S coast  | 537179 E, 431740 N  | 45                      | 1000                     | 0.49| 0.94   | 0.38  | 0.28  | 0.33  | 0.50  |
| Porto Giunco| SE coast | 544898 E, 4329748 N | 25–100                  | 1100                     | 0.52| 0.75   | 0.56  | 0.45  | 0.38  | 0.47  |
| Simius      | SE coast | 545567 E, 4330808 N | 30–70                   | 1200                     | 0.58| 0.91   | 0.44  | 0.36  | 0.58  | 0.62  |
| Is Trias    | SE coast | 546237 E, 4331382 N | 12–35                   | 170                      | 0.48| 0.69   | 0.72  | 0.38  | 0.33  | 0.29  |
| Punta Molentis| SE coast| 548094 E, 4331748 N | 12–40                   | 175                      | 0.44| 0.67   | 0.39  | 0.48  | 0.23  | 0.43  |
| Budoni      | NE coast | 560535 E, 4506350 N | 70                      | 2000                     | 0.51| 0.94   | 0.43  | 0.36  | 0.33  | 0.50  |
### Table 2
Geomorphological Condition (GCD) variables and the relative score/percent considered in the dune vulnerability classification procedure of the study areas.

| Geomorphological Condition of the Dune System - GCD | A: Porto Pino | B: Piscinnì | C1: Su Giudeu | C2: Porto Campana | C3: Sa Colonia | D: Solanas | E1: Porto Giunco | E2: Simius | E3: Is Traias | E4: Punta Molentis | F: Budoni | Values of variables |
|---------------------------------------------------|---------------|-------------|--------------|------------------|--------------|------------|-----------------|-----------|-------------|-------------------|----------|-------------------|
| 1 Length of homogeneous active dune system (km)    | 4             | 4           | 4            | 4                | 4            | 4          | 4               | 4         | 4           | 3                 | 0        | >20               |
|                                                   | 1             | 1           | 1            | 1                | 1            | 1          | 1               | 1         | 1           | 1                 | 1        | >10               |
|                                                   | 2             | 2           | 2            | 2                | 2            | 2          | 2               | 2         | 2           | 2                 | 2        | >5                |
|                                                   | 3             | 3           | 3            | 3                | 3            | 3          | 3               | 3         | 3           | 3                 | 3        | >1                |
|                                                   | 4             | 4           | 4            | 4                | 4            | 4          | 4               | 4         | 4           | 4                 | 4        | >0.1              |
| 2 Width of dynamic dune system (km)                | 4             | 4           | 3            | 3                | 4            | 4          | 4               | 4         | 4           | 4                 | 4        | >2                |
|                                                   | 1             | 1           | 1            | 1                | 1            | 1          | 1               | 1         | 1           | 1                 | 1        | >1                |
|                                                   | 2             | 2           | 2            | 2                | 2            | 2          | 2               | 2         | 2           | 2                 | 2        | >0.5              |
|                                                   | 3             | 3           | 3            | 3                | 3            | 3          | 3               | 3         | 3           | 3                 | 3        | >0.1              |
| 3 Width of frontdune as % of active dune system   | 2             | 2           | 3            | 3                | 0            | 4          | 4               | 4         | 4           | 4                 | 4        | >5%               |
|                                                   | 1             | 1           | 2            | 2                | <5%          |            |                  |           |              |                    | 1        | >25%              |
|                                                   | 2             | 2           | 2            | 2                | <50%         |            |                  |           |              |                    | 2        | >75%              |
|                                                   | 3             | 3           | 3            | 3                | <75%         |            |                  |           |              |                    | 3        | <75%              |
|                                                   | 4             | 4           | 4            | 4                | >75%         |            |                  |           |              |                    | 4        | <75%              |
| 4 Average height of secondary dunes (m)            | 3             | 3           | 3            | 3                | 4            | 3          | 4               | 3         | 3           | 3                 | 3        | >25               |
|                                                   | 1             | 1           | 1            | 1                | 1            | 1          | 1               | 1         | 1           | 1                 | 1        | >10               |
|                                                   | 2             | 2           | 2            | 2                | >5           |            |                  |           |              |                    | 2        | >5                |
|                                                   | 3             | 3           | 3            | 3                | >1           |            |                  |           |              |                    | 3        | >1                |
|                                                   | 4             | 4           | 4            | 4                | <1           |            |                  |           |              |                    | 4        | <1                |
| 5 Average height of frontal dunes (m)              | 4             | 4           | 4            | 4                | 4            | 4          | 4               | 4         | 4           | 4                 | 4        | >25               |
|                                                   | 1             | 1           | 1            | 1                | 1            | 1          | 1               | 1         | 1           | 1                 | 1        | >15               |
|                                                   | 2             | 2           | 2            | 2                | >10          |            |                  |           |              |                    | 2        | >10               |
|                                                   | 3             | 3           | 3            | 3                | >5           |            |                  |           |              |                    | 3        | >5                |
|                                                   | 4             | 4           | 4            | 4                | <5           |            |                  |           |              |                    | 4        | <5                |
| 5a If any ridges, n° of major ridges               | 3             | 3           | 3            | 4                | 4            | 3          | 3               | 3         | 3           | 3                 | 3        | >10               |
|                                                   | 1             | 1           | 1            | 1                | 1            | 1          | 1               | 1         | 1           | 1                 | 1        | >4                |
|                                                   | 2             | 2           | 2            | 2                | >2           |            |                  |           |              |                    | 2        | >2                |
|                                                   | 3             | 3           | 3            | 3                | 2            |            |                  |           |              |                    | 3        | 2                 |
|                                                   | 4             | 4           | 4            | 4                | 1            |            |                  |           |              |                    | 4        | 1                 |
| 5b If plastered to slope, slope steepness          | 2             | 2           | 2            | 2                | 4            | 2          | 4               | 4         | 4           | 4                 | 4        | moderate          |
|                                                   | 0             | 0           | 0            | 0                | moderate     |            |                  |           |              |                    | 0        | gentle            |
|                                                   | 2             | 2           | 2            | 2                | steep        |            |                  |           |              |                    | 2        | steep             |
| 5c If perched on cliff-cliff height (m)            | 2             | 2           | 2            | 2                | 0            | 2          | 2               | 2         | 2           | 2                 | 2        | >2                |
|                                                   | 2             | 2           | 2            | 2                | 2–5          |            |                  |           |              |                    | 2        | >2–5              |
|                                                   | 4             | 4           | 4            | 4                | >5           |            |                  |           |              |                    | 4        | >5                |

(continued on next page)
### Table 2 (continued)

| Geomorphological Condition of the Dune System - GCD | A: Porto Pino | B: Piscinnì C1: Su Giudeu | C2: Porto Campana | C3: Sa Colonia | D: Solanas E1: Porto Giunco | E2: Simius E3: Is Traias | E4: Punta Molentis | F: Budoni | Values of variables |
|---------------------------------------------------|---------------|---------------------------|-------------------|-----------------|----------------------------|------------------------|-------------------|-----------|-------------------|
| 6 Relative area of wet slacks measured from map (%) | 4             | 2                         | 0                 | 4               | 2                          | 4                      | 3                 | 2         | 4                 |
| 7 Degree of dune system fragmentation             | 2             | 4                         | 4                 | 4               | 4                          | 4                      | 0                 | 1         | 4                 |
| 8 Particle size of the frontal dune - Phi sizes   | 3             | 1                         | 3                 | 0               | 0                          | 2                      | 2                 | 2         | 3                 |
| **Total score/percent**                           | 29/0.81       | 12/0.75                   | 30/0.75           | 24/0.67         | 24/0.75                    | 30/0.94                | 24/0.75           | 29/0.94   | 25/0.69           |
Table 3
Marine Influence (MI) variables and the relative score/percent considered in the dune vulnerability classification procedure of the study areas.

| Marine Influence - MI | A: Porto Pino | B: Piscinnì | C1: Su Giudeu | C2: Porto Campana | C3: Sa Colonia | D: Solanas | E1: Porto Giunco | E2: Simius | E3: Is Traias | E4: Punta Molentis | F: Budoni |
|-----------------------|--------------|-------------|---------------|------------------|----------------|------------|----------------|-------------|----------------|-------------------|----------|
| Orthogonal fetch (km) | 0            | 3           | 3             | 3                | 3              | 3          | 3             | 3           | 0              | 3                 | 0        |
| Berm slope (degrees)  | 0            | 0           | 2             | 2                | 4              | 2          | 2             | 2           | 4              | 3                 | 2        |
| Width of intertidal zone (km) | 4       | 4           | 4             | 4                | 4              | 4          | 4             | 4           | 4              | 4                 | 0        |
| Tidal range (m)       | 0            | 1           | 0             | 0                | 0              | 0          | 0             | 0           | 0              | 0                 | 0        |
| Coastal orientation to wave direction (degrees) | 2       | 2           | 0             | 0                | 2              | 4          | 4             | 4           | 4              | 2                 | 2        |
| Width of the zone between HWSM and dune face (m) | 1       | 1           | 0             | 1                | 0              | 2          | 1             | 1           | 2              | 2                 | 1        |
| Breaches in the frontal dune to wash over, relative total area | 1       | 2           | 0             | 0                | 1              | 0          | 2             | 0           | 3              | 1                 | 0        |
| % frontal dune cliff by the sea or with only ephemeral dunes as % of dune height | 0       | 1           | 0             | 1                | 0              | 0          | 4             | 0           | 0              | 0                 | 0        |
| Particle size of the beach: Phi sizes | 4       | 2           | 2             | 2                | 2              | 2          | 2             | 2           | 2              | 2                 | 0        |
| Total score/percent   | 8/0.33       | 16/0.44     | 11/0.34       | 12/0.33          | 15/0.42        | 12/0.38    | 18/0.56       | 16/0.44     | 26/0.72        | 14/0.39           | 12/0.43  |
| Aeolian Effect - AI         | A: Porto Pino | B: Piscinnì | C1: Su Giudeu | C2: Porto Campana | C3: Sa Colonia | D: Solanas | E1: Porto Giunco | E2: Simius | E3: Is Traias | E4: Punta Molentis | F: Budoni | Values of variables |
|---------------------------|--------------|-------------|--------------|-------------------|---------------|------------|-----------------|------------|---------------|---------------------|-----------|-------------------|
| 1 Sandy supply input      | 2            | 2           | 4            | 2                 | 2             | 4          | 1               | 4          | 1             | 0 high              | 0         | low               |
| 2 % Cover of embryodunes along the seaward edge | 3            | 3           | 3            | 4                 | 4             | 3          | 2               | 3          | 3             | 2 >50                | 0         | >25               |
|                           |              | 1           | >25          | 2                 | >5            | 3          | <5              | 4          | none          | 4 >50                |           | none              |
| 3 Blowouts: % of the system | 2            |              |              | 3                 | 0             | 0          | 0               | 0          | 0             | 1 <5%                | 0         | <10%             |
|                           |              | 1           | <10%         | 2                 | <25%         | 3          | <50%            | 4          | >50%          | 4 >50%               |           | >50%             |
| 4 Aeolian breaches in seaward face not induced by trampling: % of the system | 1            | 4           | 3            | 4                 | 2             | 1          | 1               | 1          | 0             | 1 <5%                | 0         | <10%             |
|                           |              | 1           | <10%         | 2                 | <25%         | 3          | <50%            | 4          | >50%          | 4 >50%               |           | >50%             |
| 4a If breaches-depth as % of dune height | 0            | 3           | 4            | 3                 | 0             | 0          | 1               | 0          | 1             | 1 <5%                | 0         | <10%             |
|                           |              | 1           | <10%         | 2                 | <25%         | 3          | <50%            | 4          | >50%          | 4 >50%               |           | >50%             |
| 5 Natural litter drift cover as % surface | 4            | 3           | 1            | 1                 | 2             | 4          | 2               | 4          | 4             | 1 0%                 | 0         | <5%              |
|                           |              | 1           | <5%          | 2                 | >5%          | 3          | >25%            | 4          | >50%          | 4 >50%               |           | >50%             |
| 6 Pebble cover as % surface | 0            | 1           | 0            | 0                 | 0             | 2          | 1               | 1          | 1             | 3 0%                 | 0         | <5%              |
|                           |              | 1           | <5%          | 2                 | >5%          | 3          | >25%            | 4          | >50%          | 4 >50%               |           | >50%             |
| 7 Shell cover as % surface on upper beach | 1            | 1           | 1            | 1                 | 1             | 0          | 2               | 1          | 2             | 3 0%                 | 0         | <5%              |
|                           |              | 1           | <5%          | 2                 | >5%          | 3          | >25%            | 4          | >50%          | 4 >50%               |           | >50%             |
|   | % seaward dune vegetated |   | % of the system unvegetated |   |   |   | Total score/percent |
|---|--------------------------|---|-----------------------------|---|---|---|---------------------|
| 8 | 1 2 1 2 2 1 2 2 0 1 1 0 1 |   | 1 2 3 2 2 2 3 3 1 2 2 0 |   |   |   | 15/0.38 19/0.59 14/0.44 22/0.61 21/0.52 9/0.28 18/0.45 13/0.36 15/0.38 19/0.48 10/0.36 |
| 9 | 1 >90 1 >60 2 >30 3 >10 4 <10 |   | 1 >10 2 >20 3 >40 4 >75 |   |   |   |                     |

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Table 5
Vegetation Condition (VC) variables and the relative score/percent considered in the dune vulnerability classification procedure of the study areas.

| Vegetation Condition - VC | A: Porto Pino | B: Piscinì | C1: Su Giudeu | C2: Porto Campana | C3: Sa Colonia | D: Solanas | E1: Porto Giunco | E2: Simius | E3: Is Traias | E4: Punta Molentis | F: Budoni | Values of variables |
|---------------------------|---------------|-----------|---------------|------------------|-------------|-----------|----------------|-----------|--------------|-------------------|----------|-------------------|
| 1 % cover of Type III plants in the beach | 1 | 2 | 4 | 2 | 4 | 2 | 4 | 4 | 3 | 4 | 2 | 0 | >50 |
| 2 % cover Type III plants in the seaside of the frontal dune | 1 | 2 | 4 | 2 | 3 | 2 | 1 | 2 | 1 | 0 | 1 | 0 | >90 |
| 3 Relative proportion of Type II plants in the seaside of the frontal dune (% cover) | 0 | 2 | 2 | 2 | 3 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | >15 |
| 4 Relative proportion of Type I plants in the seaside of the frontal dune (% cover) | 3 | 1 | 0 | 2 | 4 | 3 | 1 | 4 | 0 | 0 | 3 | 0 | >1 |
| 5 Relative proportion of exotic species in the seaside of the frontal dune (% cover) | 1 | 1 | 0 | 2 | 2 | 1 | 2 | 3 | 2 | 0 | 0 | 0 | <1 |
| 6 Relative proportion of Type II & III plants in 100 m inland of the dune front | 1 | 3 | 0 | 2 | 2 | 1 | 1 | 3 | 0 | 1 | 1 | 0 | >75 |
| 7 Relative proportion of vigorous plants or plants with normal vitality in the seaside of the frontal dune (%) | 1 | 4 | 2 | 4 | 1 | 1 | 1 | 4 | 1 | 1 | 1 | 1 | >10 |
| 8 Relative cover (%) of exposed roots in the seaside of the frontal dune | 1 | 2 | 2 | 2 | 1 | 1 | 3 | 0 | 4 | 0 | 1 | 0 | <5 |
|   | Relative proportion (%) of plants with obvious effect of physical damage |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 2 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | <5 |
| 1 | >5 |   |   |   |   |   |   |   |   |
| 2 | >15 |   |   |   |   |   |   |   |   |
| 3 | >25 |   |   |   |   |   |   |   |   |
| 4 | >50 |   |   |   |   |   |   |   |   |

|   | % Vegetation removal seaward of the frontal dune due to human disturbance |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 0 |
| 1 | >10 |   |   |   |   |   |   |   |   |
| 2 | >25 |   |   |   |   |   |   |   |   |
| 3 | >50 |   |   |   |   |   |   |   |   |
| 4 | >75 |   |   |   |   |   |   |   |   |

| Total score/percent | 10/0.25 | 21/0.53 | 18/0.45 | 23/0.57 | 25/0.62 | 13/0.33 | 15/0.38 | 23/0.58 | 13/0.33 | 9/0.23 | 13/0.33 |
| Human Effect - HE | A: Porto Pino | B: Piscinni | C1: Su Giudeu | C2: Porto Campana | C3: Sa Colonia | D: Solanas | E1: Porto Giunco | E2: Simius | E3: Is Traias | E4: Punta Molentis | F: Budoni | Values of variables |
|------------------|----------------|-------------|----------------|-------------------|---------------|------------|------------------|------------|---------------|---------------------|----------|---------------------|
| 1 Visitor pressure | 4 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 4 | 0 low 2 moderate 4 high |
| 2 Visitor frequency | 2 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 0 low 2 moderate 4 high |
| 3 Access difficulty | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 0 low 2 moderate 4 high |
| 4 On dune driving | 2 | 1 | 0 | 0 | 4 | 4 | 2 | 2 | 4 | 2 | 4 | 4 | 0 none 2 some 4 much |
| 5 On beach driving | 2 | 1 | 2 | 2 | 4 | 4 | 4 | 4 | 2 | 2 | 2 | 2 | 0 none 2 some 4 much |
| 6 Horse riding | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 none 2 some 4 much |
| 7 Path network as percent of the frontal dune | 2 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 1 | 2 | 3 | 3 | 0 0% 1 <5% 2 >5% 3 >25% 4 >50% |
| 7.1 Path width (m) | 3 | 4 | 4 | 4 | 4 | 4 | 2 | 2 | 3 | 1 | 2 | 2 | 0 <1 1 <2 2 <3 3 <5 4 >5 |
| 7.2 Paths incised as percent of the frontal dune height | 3 | 2 | 4 | 2 | 4 | 4 | 1 | 2 | 0 | 1 | 1 | 1 | 0 <5 1 <25 2 <50 3 >50 4 >75 0 0% 1 <5% 2 >5% 3 >25% 4 >50% |
| 8 Anthropogenic litter: cover as % of surface cover | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 0% 1 <5% 2 >5% 3 >25% 4 >50% |
|   | Description                                                                 | 0% | 1%  | 2%  | 2%  | 0%  | 2%  | 2%  | 0%  | 0%  |   |
|---|------------------------------------------------------------------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| 9 | Amount of sand (%) extracted for building etc.                               |    | 1%  | 2%  | 2%  | 0%  | 2%  | 2%  | 0%  | 0%  |   |
| 10| Summer beach cleaning frequency. (High is twice a day; medium, daily)       | 2% | 1%  | 1%  | 1%  | 4%  | 4%  | 2%  | 3%  |    |   |
| 11| % upper beach cleaned                                                        | 3% | 3%  | 4%  | 2%  | 1%  | 4%  | 4%  | 4%  |    |   |
| 12| % permanent infrastructure replacing active dunes (roads, houses, etc.)       | 1% | 0%  | 0%  | 0%  | 4%  | 0%  | 3%  | 0%  | 0%  | 1%|
| 13| % ephemeral infrastructure replacing active dunes (outdoor facilities, camping, etc.) | 0% | 0%  | 2%  | 0%  | 1%  | 0%  | 2%  | 0%  | 0%  | 0%|
| 14| Relative surface (%) forested in system (200 m inland from foredune)         | 1% | 0%  | 0%  | 0%  | 1%  | 0%  | 0%  | 0%  | 0%  | 2%|
| 15| Relative cover (%) of agriculture in system (200 m inland from foredune)     | 0% | 0%  | 0%  | 0%  | 1%  | 0%  | 0%  | 0%  | 0%  | 0%|
| 16| Grazing on the active system                                                 | 0% | 4%  | 0%  | 0%  | 0%  | 0%  | 0%  | 0%  | 0%  | 0%|
| 17| Rabbit numbers                                                               | 1% | 2%  | 4%  | 4%  | 0%  | 1%  | 0%  | 2%  | 3%  | 4%|

| Total score/percent | 31/0.41 | 31/0.41 | 38/0.50 | 36/0.47 | 41/0.54 | 24/0.50 | 34/0.47 | 47/0.62 | 21/0.29 | 31/0.43 | 24/0.50 |
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Transparency document

Transparency document associated with this article can be found in the online version at https://doi.org/10.1016/j.dib.2019.103897.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.dib.2019.103897.

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