



HAS THE GARGANO PROMONTORY AN IMPORTANCE FOR THE ECOLOGY OF THE TURTLE (*Caretta caretta*) IN THE ADRIATIC SEA?

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Introduction

The Gargano promontory is a little peninsula which divides the middle from the southern Adriatic Sea. Its coast is extended for about 160 Km and is constituted of an alternation of low and sandy littorals with high coasts like cliffs. The low and sandy littoral is mainly localized along the northern coast and it's about 60 Km long; the most important element of this area is the coastal dune that parts the Lesina and Varano coastal lakes from the Adriatic Sea. This area includes a lot of habitats and species of community interest, moreover the coastal dune is included in the pSIC (IT 9110001 coastal dune and lake of Varano and IT 9110015 coastal dune and lake of Lesina-Fortore river's mouth) and in the Garagano National Park.

The Adriatic Sea is shallow, with a wide continental bed and eutrophic waters as a consequence of the high rivers contribution; the physical and chemical parameters are strongly influenced by the meteorological conditions that also influence the biological cycle of the marine species.

The loggerhead turtle (*Caretta caretta*) is one of the numerous animal species of the Adriatic Sea; it is one of the biggest living turtles, is endangered and protected by the international legislation (Washington Convention, 1973; Berna 1979, Directive 92/43/CEE). Since 1996 is included by the UE in the list of the endangered species in the Barcelona protocol (1995). This work shows the results of the stranded specimen of *Caretta caretta* along the Gargano coast during the period 2001-2004.

Materials and methods

The Institute for the Study of Coastal Ecosystems (Nation Research Council, CNR) of Lesina (Foggia) is directly bound in the stranding monitoring for the marine animals of the Gargano coasts. When a signalling arrives, the Institute staff is immediately ready for a rescue operation. For every stranded animal (alive or dead) the biometric parameters (weigh; carapace length and wide), the stranding locality, and, if possible, the reason of their ashore were analyzed. The alive animals were housed at the Institute of Lesina for a first aid and, when necessary, were transferred to the Stazione Zoologica "Anton Dohrn" of Naples, where they were recovered. When the turtles are successfully rehabilitated they are set free in the same area of the stranding.

The stranding data were related to the meteorological parameters (air and water temperature), from the web site <http://apat.idromare.com>, that could influence the biological cycle of the species.

Results

During these four years 86 stranded specimen (alive or dead) of *Caretta caretta* have been totally recorded. The 73% of the turtles weighed between 0.12 e 20 kg (mean=9.15 kg) (Figure. 1); only 5 individuals with a body mass between 50 and 80 kg were found.

The curved carapace length (CCL) ranged from 9.5 to 66 cm (mean 43.03 cm) in the 88.4% of the stranded animals, these data show that these turtles were definitely immature (Bentivegna et al. 2002); the resting 11.6% ranged between 70 and 80 cm (mean 75 cm).

The greatest number of strandings (n=47), has been recorded in the 2002: during this year 30 animals were signaled only in January.

The 57% of the animals weighed between 0.12 e 10 kg (mean 5.58 kg.) (Figure 2). The definitely immature with a CCL from 0.95 to 60 cm (mean 39.7) were the 91% of the total.

During the period 2001-2004, the 55% of the stranded animals were recorded along the northern Gargano littoral, in particular along the dunal coast which parts the two coastal lakes of Lesina and Varano. These events were mostly recorded during the autumn-winter season, when the meteorological conditions were more changeable.



pSIC (IT 9110001) coastal dune and lake of Varano



pSIC (IT 9110015) coastal dune and lake of Lesina-Fortore river's mouth



Figure. 1

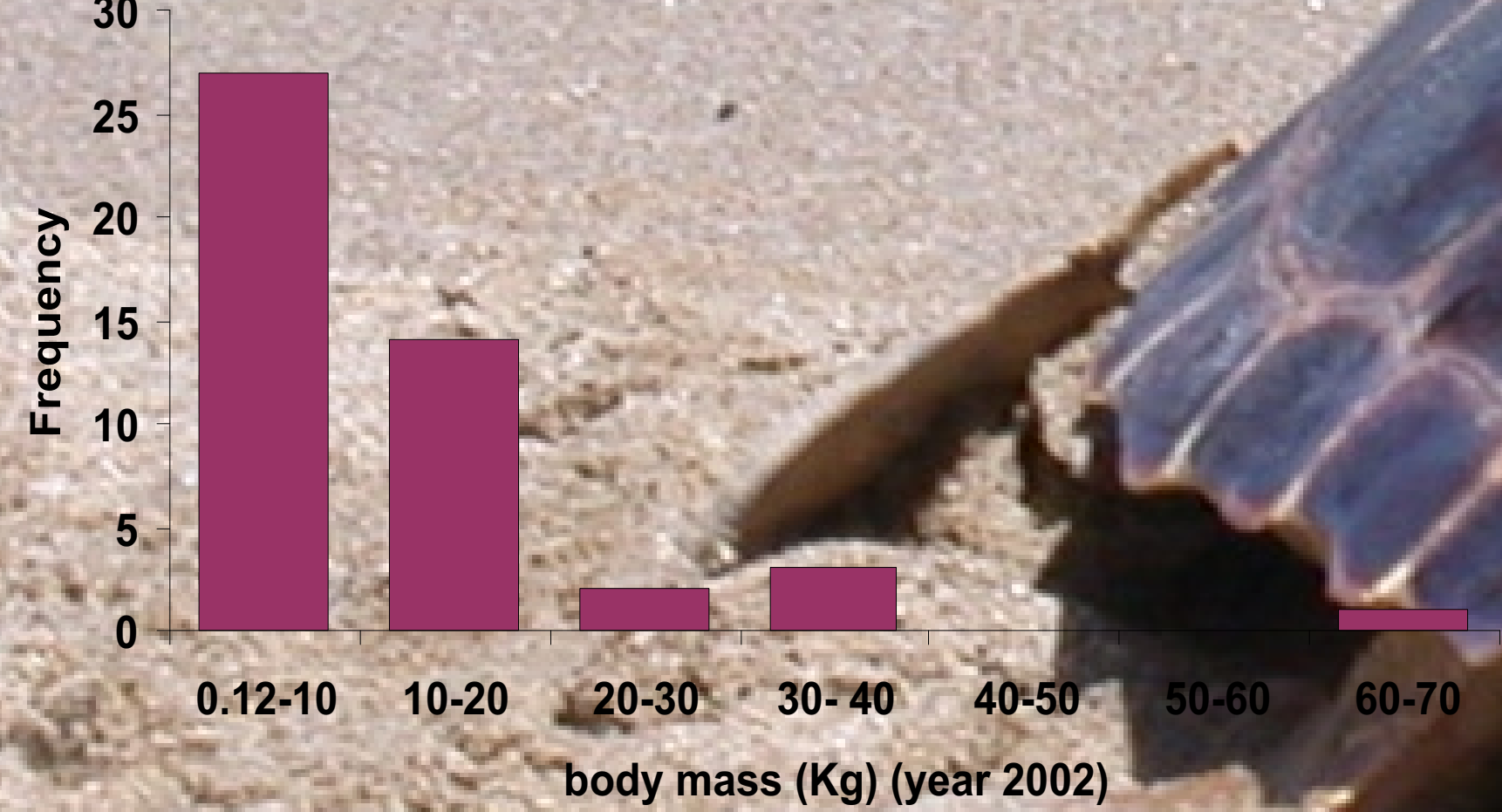
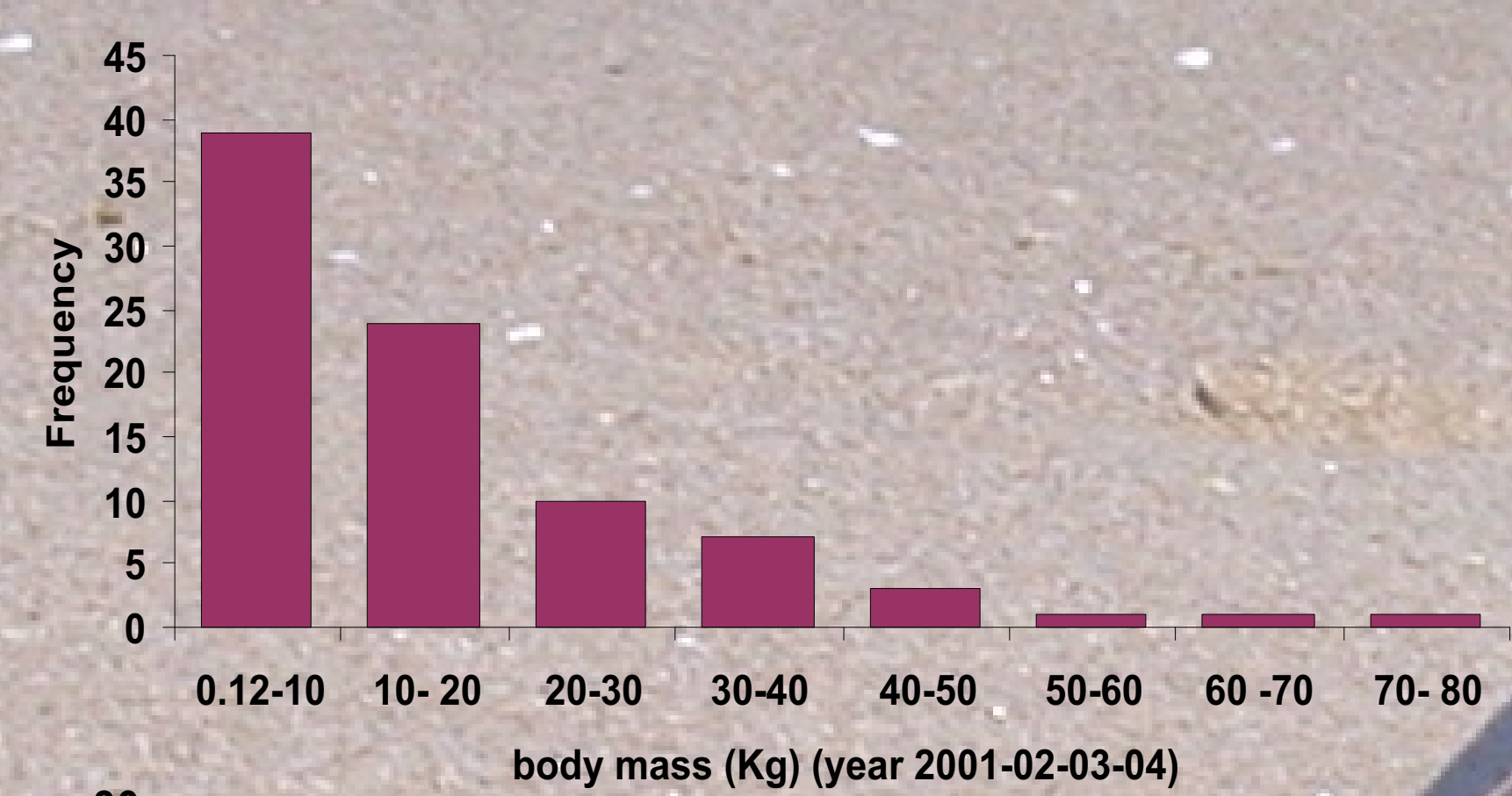
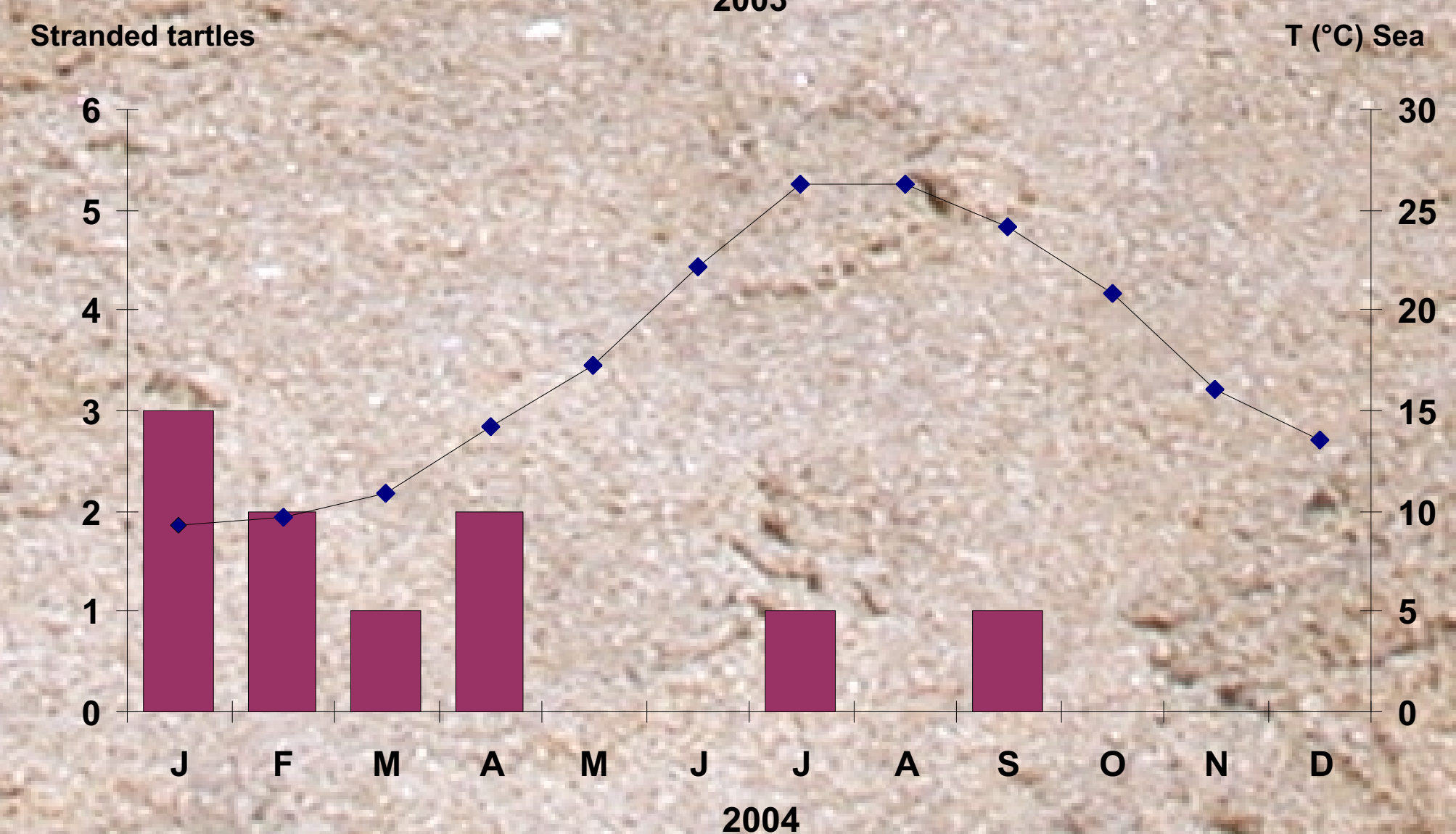
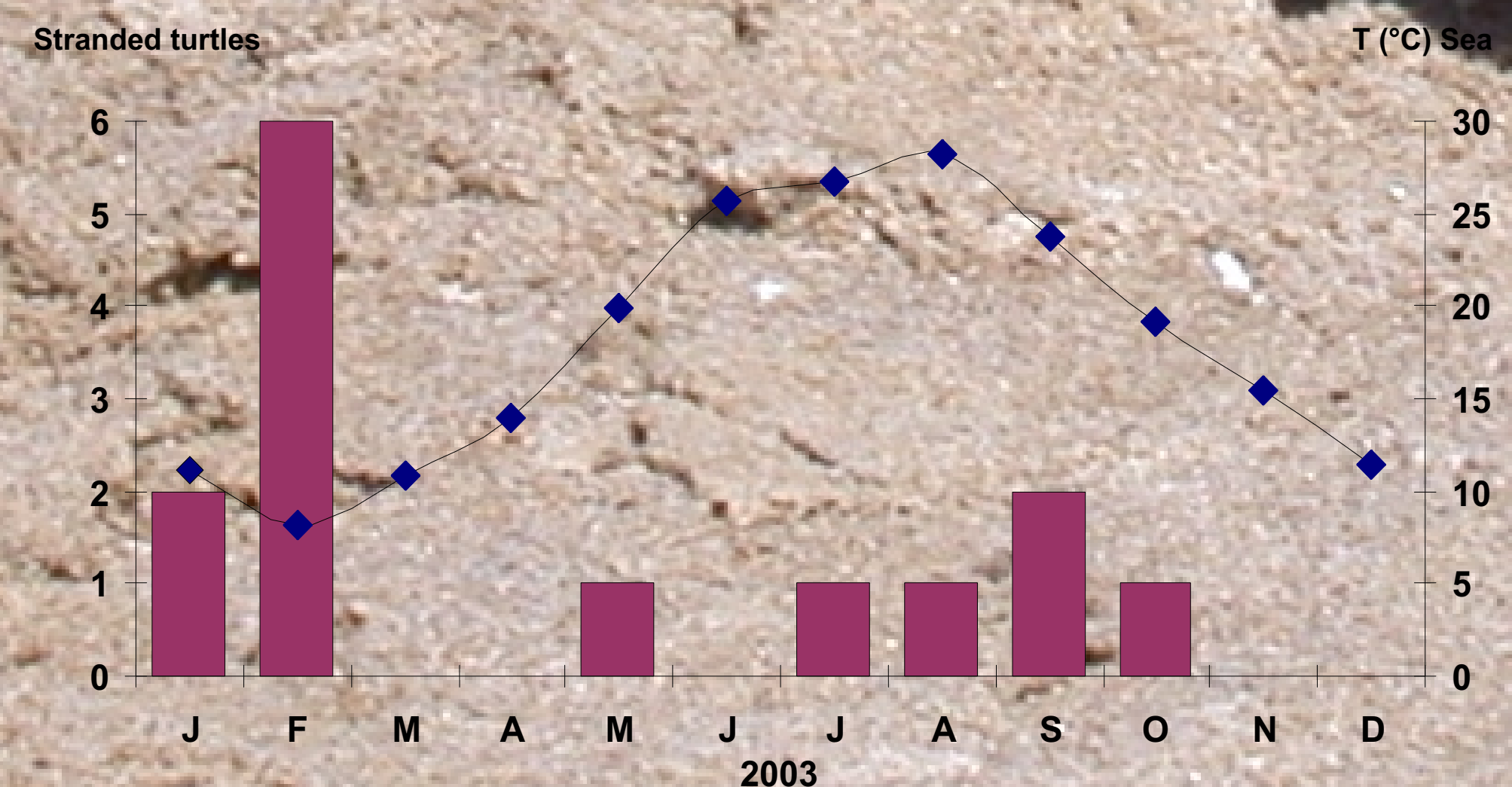
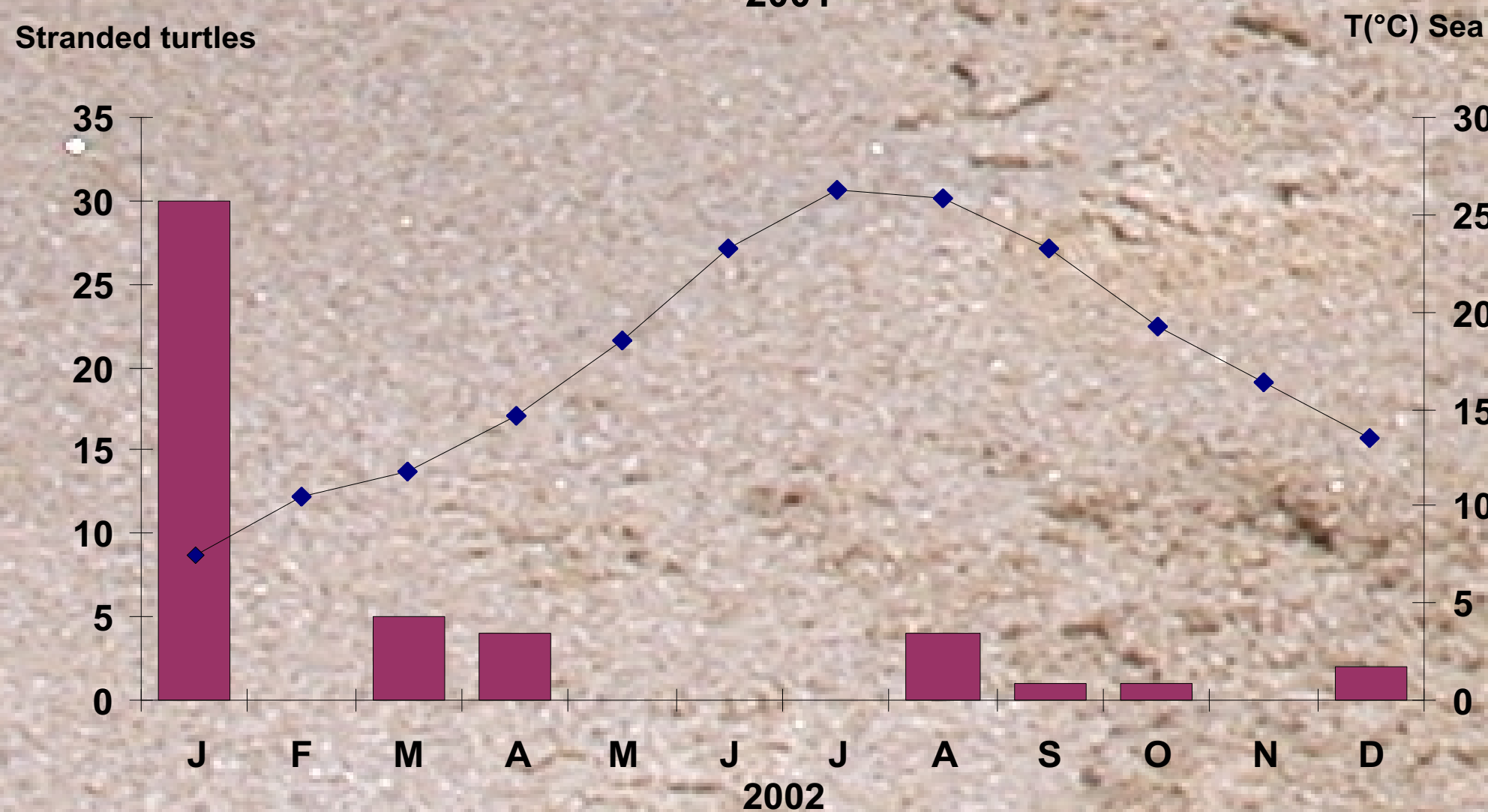
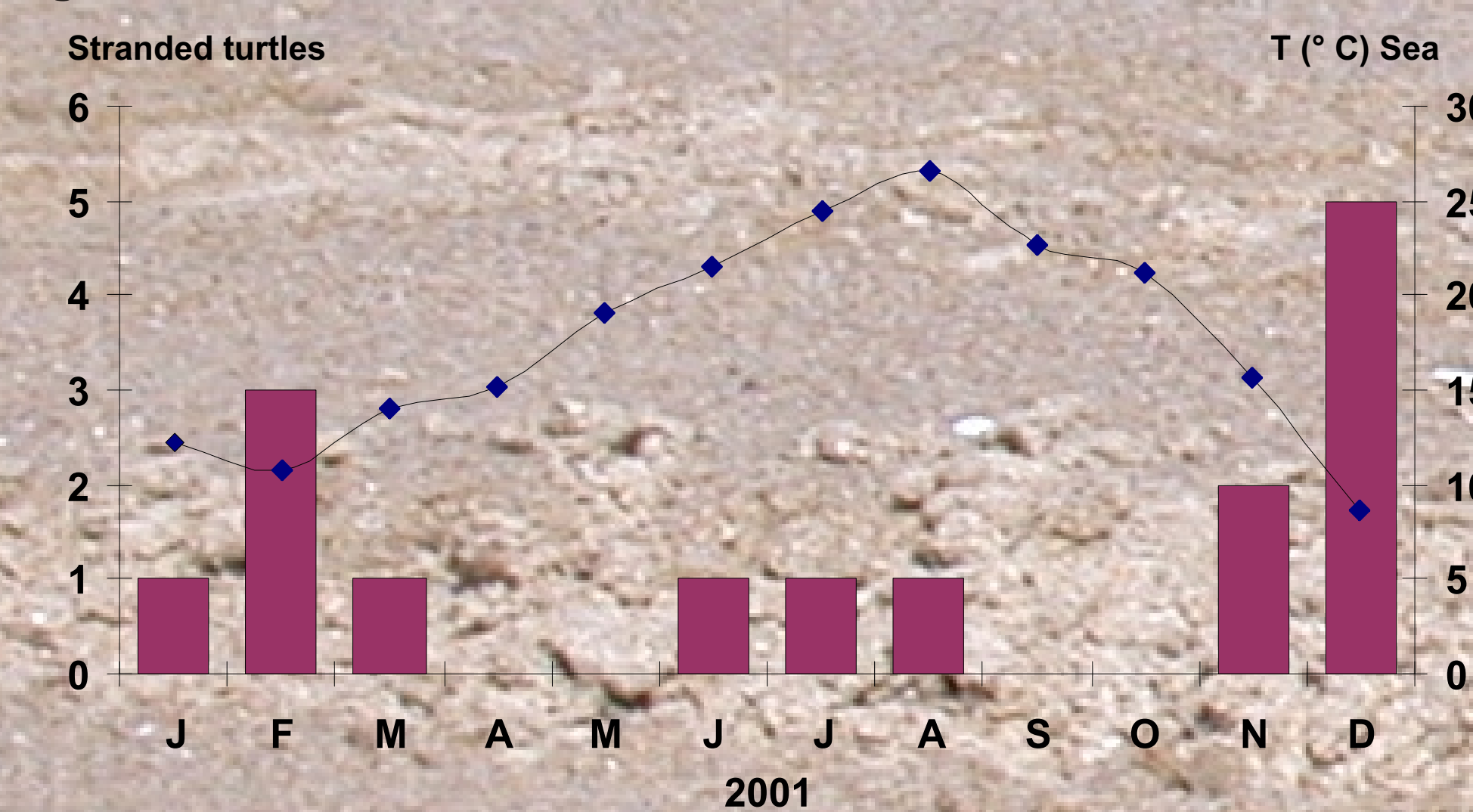


Figure. 2



Discussion and conclusion

The stranding has been more localized along the littoral of the northern Gargano and probably the main reason is represented by the meteorological conditions. Thus the northern shore of Gargano intercepts everything in the sea which the prevailing NE and NNW winds blow southwards. In this way turtle already affected by low temperatures and unable to swim, may have been drifted passively by the current southwards where they were finally recovered.

The extraordinary strandings recorded in January 2002, were probably caused by a cold stunning in the animals as a consequence of the unexpected and prolonged sea temperature fall. Indeed during this month the lowest mean sea temperature (7.5°C) among the four years 2001-2004 has been recorded.

As confirmed by the biometric analysis, the greatest part of the recorded animals were sexually immature. (Bentivegna et al. 2002).

Stranded turtles represent only a small part of the totally dead turtles. Even if the sample number was little (n=86), these results give prominence to the presence of the loggerhead turtles *Caretta caretta* in the marine zone in front of the Gargano littoral.

The Gargano promontory is probably a barrier for turtles migrations to much more hot seas, when water temperature is in contrast with their physiology.

For better understanding the *Caretta caretta* ecology and for a better comprehension of the causes of these frequent strandings along the northern Gargano, a junction with the available data and the marine biocenotic features caused by the antropic activities along the coastal littoral is wished. Is also wished the start of a program for the protection and the management of the coastal marine habitat.

References

- Affronte, M & D. Ravanelli. (2001). Analysis of stranded sea turtles in the north-wester Adriatic Sea. *Zoology in the Middle East* 24:101-108.
- F. Bentivegna, P. Breber & S. Hochscheid. (2002). Cold Stunned Loggerhead Turtles in the South Adriatic Sea. *Marine Turtle Newsletter* No. 97. 2001.
- Zucca P., Francese M., Zuppa F., Spoto M., Oberosler R. (2003). Interventi Medico Veterinari su tartarughe marine comuni spiaggiate nel nord Adriatico. *Journal of Mountain Ecology* N.7, 2003.