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MONK SEAL PRESENCE AND HABITAT ASSESSMENT RESULTS OF A PRELIMINARY MISSION CARRIED OUT IN SYRIA

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Introduction

Mediterranean monk seal presence has never been verified along Syrian shores and there is a large information gap both as to the species' historical and more recent occurrence. Aguilar (1998) states that it is unclear whether this lack of information is due to deficiency of appropriate habitat, early extinction of the species or simply lack of adequate surveys. However, proximity to areas characterized by regular monk seal presence, such as Turkey or Cyprus (Aguilar 1998) allows us to hypothesize that a geomorphologic continuity providing some monk seal habitat should be available at least along the stretches of Syrian coast closest to Turkey, and this could account for past records of monk seal presence. Moreover, even if human disturbance along the Syrian coasts were such that monk seal presence were to have become irregular, the proximity to the Cilician coasts where 25 monk seal individuals have been photo-identified (Gucu et al., in press) and the undisturbed coastline of the southern Turkish border and north-eastern Cyprus, where monk seals are hypothesized to exist, could encourage a movement of the very same animals into Syrian waters. If this were to be the case, the presence of protection and conservation measures, such as the establishment of marine protected areas, would surely benefit the survival of those individuals in Syrian waters and would increase the chances of the animals transiting for a longer time along its coasts.

Preliminary information collected from the High Institute of Marine Research of Tishreen University has shown that some monk seal observations are reported by local communities along the country's most northern shores and as far south as Lattakia and Banyas. A preliminary mission was carried out within the framework of UNEP-MAP's MedMPA (1) project between 3-6 October 2002 to begin assessing monk seal presence in Syria, both in terms of coastal habitat availability (2) as well as monk seal sightings. Given the limited amount of time, activities were carried out along the following fronts:

1. Preliminary assessment of the coastline morphology from Lattakia to the border with Turkey.
2. Aquatic inspection of a sample of the coastline so as to verify and document the presence of possible caves suitable as potential monk seal shelters.
3. Interviews with fishermen aimed at collecting information on the species' presence.
4. Capacity building of local marine biological researchers so as to strengthen their capacity to conduct long-term studies on the species or to start monitoring studies on the species' presence in Syria.

Methods

1. Preliminary assessment of the coastline morphology

The coastline was visually inspected by boat during a two-day period. Photographic documentation was obtained along all stretches of coastline for a total of approx. 50 km of coast extending from the landing site of Ibn Hani (just to the north of Lattakia) until the border with Turkey.

2. Aquatic inspection of a sample of the coastline

A portion of the coastline of sector 9 and 7 (see Fig. 1) was aquatically inspected for the presence of caves and possible monk seal haul-out sites. Haul-out areas were photographed and measured and diagrams depicting the horizontal section of each cave were drawn.

3. Fishermen interviews aimed at collecting information on the species' presence

A fishermen survey was conducted to collect information on Mediterranean monk seal sightings along the Syrian northern coasts based on a questionnaire prototype already used by working groups in other parts of the Mediterranean and which in turn is based on a methodology proposed by Boyd and Stanfield in 1998. The strong points of the questionnaire are linked to its strict application to fishermen as well as to the use of figurative images of marine species that the fishermen are most likely to have encountered. In such a way, the interviewees do not know the purpose of the questionnaire in advance and are less inclined to intentionally deceive the questioner. The species cards which were shown to the fishermen are as follows: *Cetorhinus maximus*, *Caretta caretta*, *Monachus monachus* (adult male), *Monachus monachus* (subadult), *Dermochelys coriacea*, *Siganus luridus*, *Sargocentrum rubrum*, *Mullus surmuletus*, *Tursiops truncatus*.

4. Capacity building of local marine biological researchers

Dr. Izdihar Ammar and Dr. Wassem Ghanem, of the Lattakia High Institute of Marine Research, participated in the field research and were trained to carry out the above mentioned interviews so as to obtain a larger sample size of interviewed fishermen, and so that the results gathered for the Syrian coastline may be interpreted in a comparative manner, with respect to similar questionnaire initiatives being gathered in other areas of the Mediterranean where monk seal presence is under study. A 2-hour seminar was also conducted aimed at updating the research personnel associated with the Lattakia High Institute of Marine Research on issues concerning monk seal biology and ecology.

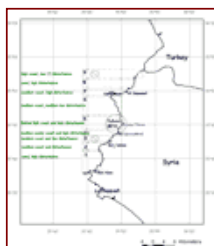
Results and Conclusion

1. Preliminary assessment of the coastline morphology

The landing sites observed during the field mission were as follows:

Name	Characteristics of site
Ibn Hani	sandy small bay
Birj Islam	not verified
Al Quandeel	sandy beach
Oum' Tiour	small tide pools, protected by rocks
Al Basseet	sandy beach

A preliminary assessment of the coast allowed us to subdivide it into 9 sectors (see Fig.1), characterized by typology of coastline as well as the presence of human pressures of various types. Sectors were then subdivided into high, medium, low and null ranking, in terms of habitat suitability, on the basis of the degree of human encroachment and the typology of coast (3). Fig. 1 graphically summarizes the sector subdivision obtained from the field observations. Sector 9 appears the most suitable in terms of hypothesizing an optimal ranking of physical coastal habitat availability because of its coastal conformation, the medium-low human encroachment and the proximity to the Turkish border. Sectors 3 and 6 appear to have a medium ranking for coastal habitat suitability while sector 5 has a low ranking since the only feasible yet limited area of the sector is that characterized by Oum' Tiour mountain. The remaining sectors are given a null ranking in terms of habitat suitability.



(click to enlarge)

Fig. 1. Map of the study area and the 9 identified sectors. A summary of the coastal conformation and degree of encroachment is highlighted in green bold type whereas the red circles indicate areas with partial protection zones.

2. Aquatic inspection of a sample of the coastline

Two coastal caves were identified in Sector 9, which could be of interest as eventual haul out areas: Sy1 and Sy2. In particular:

- Sy1 is located in a small bay inlet with a pebble beach and its entrance lies in the southernmost part of this beach. Direct access to the cave from the beach contributes in making this cave easily disturbed by human presence.
- Sy2, in contrast, lies more protected behind a rocky ledge so that its entrance is not clearly visible to boats navigating the area. However, it is proximate to a rather large and clearly visible cave that leads into a long water corridor which could draw attention from pleasure boaters and hence cause disturbance to the site next to it .

Both cave Sy1 and Sy2 are characterized by open vaulted entrances which make them clearly visible to the human eye from the waterfront, and as such they do not seem to hold the most optimal characteristics in terms of a protected seal shelter. However, such potential drawbacks might be remedied should appropriate protection measures be enacted for this area.

Sector 9 appears to be the most suitable as monk seal habitat both in terms of geologic formation, closeness to the Turkish colony of monk seals, and the relative isolation of the coastline from human disturbance. A more detailed and thorough inspection of the stretch of coast from Pigeon island until the border with Turkey might indicate the presence of additional caves and confirm this hypothesis. Despite the fact that the area is off-limits to fishing boats due to the closeness of the border, and that local villages lie far into the mountains, the coast appears to be used intensively for recreational purposes by the local community during holidays. Preliminary observations conducted during the aquatic inspection seem to indicate a noticeable amount of fishing pressure in the area as well. During the inspection of the submerged coastal environment, in fact, the fish fauna inhabiting the rocky boulder seabed was composed predominantly of juvenile classes of fish (Sparidae and a conspicuous amount of *Epinephelus* spp.) and virtually no individuals of large class sizes. No demersal cephalopods were observed. Such observations might be linked to a possible overfishing problem in the area. Most of the fishing practices observed in the overall study area are related to artisanal fisheries mainly using trammel nets set close to the coast. Moreover, during the aquatic inspection of sector 7, several observations were made of dead young fry lying a few metres from the coast on the seafloor, which could imply the use of dynamite or other types of illegal fishing methods. Further campaigns should be carried out to determine the occurrence and distribution of the coastal marine fauna and of the possible human pressures exerted on these.

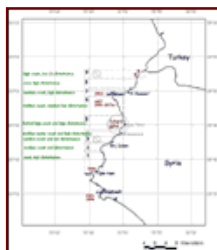
3. Fishermen interviews aimed at collecting information on the species' presence

During the preliminary mission, special efforts were made to conduct the survey with marine researchers from the High Institute of Marine Research so as to train the personnel to carry out survey work in a more extensive fashion amongst the fishing community operating from Lattakia to the north. The fishing community of this area amounts to approximately 600 fishermen and the researchers were asked to conduct the interview during the months of October-November amongst at least 300 fishermen. Analysis of the final dataset gathered during these two months still needs to be conducted but preliminary information based on the 15 interviews conducted between 3-6 October at the landing sites of Ras Basseet and Ibn Hani indicates the following sighting information.

Date	Location of monk seal sighting	Notes
1955-1980	Singar mtn., Ras n Nouras, Sim Laka	1-2 animals
1979	Fenar (south of Ras Basseet)	
1979	Ras Basseet	
1996	Afamia	
1997-2002	Kordoban (1 km from Ras Basseet)	
1998	Abn Hani	
1998	Ras Basseet	One animal is killed by gunshot while it is hauled out on the rocks
2001	Abn Hani (Afamia)	
2002, September	Ras Basseet	

From the preliminary interviews carried out during the survey, the monk seal is chosen by 8 fishermen out of 16 and tends to be chosen in 4-6th position out of 8 possible choices. It is amongst the species being chosen last, which would appear to indicate a lower frequency of encounter with respect to other more common species such as *Mullus surmuletus*, *Sargocentrum rubrum*, *Caretta caretta* and *Tursiops truncatus*. However, it appears to be chosen more than other species such as *Dermochelys coriacea* and *Cetorhinus maximus*, which are known to be only rarely encountered along southern Mediterranean shores.

Fig. 2 indicates the sectors in which the reported monk seal sightings occurred. Based on the presumption that monk seals observed along a stretch of coast would be likely to utilize those sites with the most optimal cave characteristics, providing some resting or haul-out areas, it would appear feasible to hypothesize that most sightings should occur along Sector 9. However, no monk seal observations were reported during fishermen interviews for Sector 9 (see Fig. 2). Conceivably, this might be attributable to the fact that interviews were limited to a sample of 16 interviewees and that these were sampled from the landing sites of Ibn Hani and Al Basseet. Considering that fishing by boat is not permitted in Sector 9, it is highly improbable that fishermen would have encountered a seal along this particular coastal strip. It is more likely that some observations may have been made by the recreational seafarers utilizing this coast who reside in the foothills of the mountains behind Sector 9. To this end, a more detailed study of the phenomenon should be conducted in the future. Some sightings are reported as far south as Sectors 7, 6, 1 and even outside the port of Lattakia. Such observations might be explained by the fact that such sectors are more densely inhabited, leading to a higher probability of monk seal observations by fishermen, and that the animals sighted in the area might be in transit or on feeding bouts. However, the above hypotheses require further research as the sample size of fishermen is too small to confirm such a deduction with any degree of certainty.



(click to enlarge)

Fig. 2. Map of the study area, its sectors, the position of the two identified caves (red stars) and monk seal sightings reported by fishermen (dates appearing in red in each relevant sector).

Conclusion

- Sector 9 appears the most suitable sector in terms of physical coastal characteristics providing the best type of available habitat for the species. Moreover, preliminary information reported by researchers concerning the Turkish border with Syria indicates a strong possibility of monk seal presence on and around the Turkish side of the border. The remaining portion of Sector 9 should therefore be aquatically inspected, and threats due to human presence should be evaluated so as to better formulate a plan to minimize them in future conservation and protection initiatives.
- Aquatic investigations of Sectors 6 and 3 could be considered on a second priority basis.
- Fishermen interviews should be conducted on a wider scale amongst the fishing community in order to produce solid data regarding monk seal sightings in the area.
- Interviews should be conducted amongst other categories of sea users (i.e. tourist boat skippers, etc.) so as to collect more information on seal sightings

Acknowledgements

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1) The MedMPA project is a European Community-funded initiative, coordinated by UNEP-MAP's RAC/SPA, whose purpose is to collect scientific information for the establishment of marine protected areas and to elaborate management and zoning plans suitable for specific contexts. The project is based in 7 Mediterranean countries and involves collaboration schemes amongst different scientific Mediterranean institutes.

2) Mediterranean monk seal coastal habitat is currently associated with isolated stretches of rocky coastline characterized by caves and haul-out areas providing protection from human disturbance, such as caves with underwater or hidden entrances. To this end, habitat availability generally implies a presence of the abovementioned coastal characteristics, as well as adequate prey sources.

3) Sectors characterized by low human pressure and a medium-high possibility of coastal cave presence were given a high priority ranking in terms of possible coastal habitat suitability; sectors characterized by medium human pressure and medium possibility of coastal caves were given a medium ranking; areas characterized by high human pressure and low possibility of coastal caves were given a low ranking, while areas characterized by high human pressure and no presence of coastal habitat were given a null ranking.

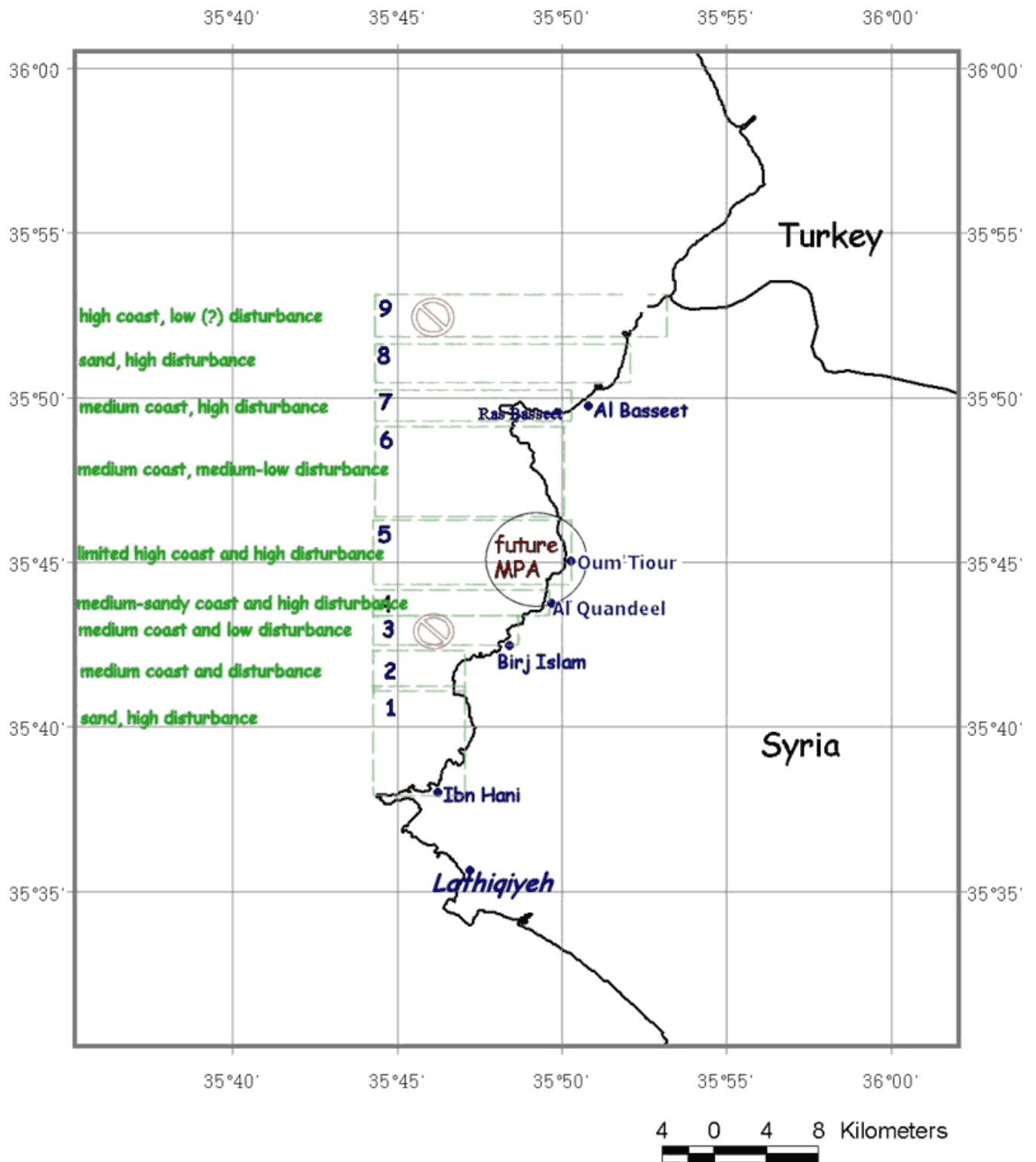


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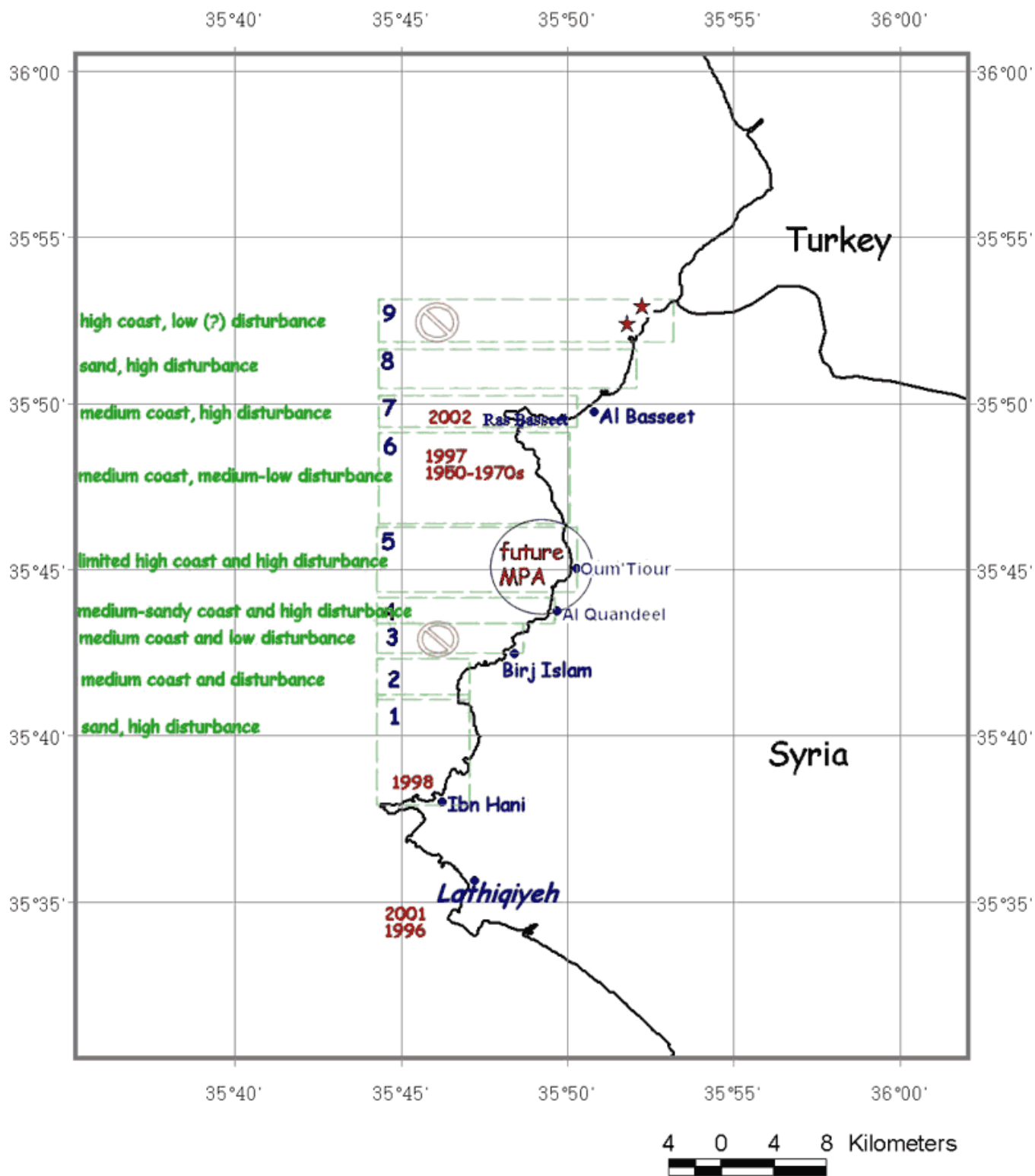


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