



Photo: Mia Elasar

REPORT

Potential suitable habitats for the Mediterranean monk seal, *Monachus monachus*, along the Israeli coast

February 2023



Potential suitable habitats for the Mediterranean monk seal, *Monachus monachus*, along the Israeli coast

Roditi-Elasar, M., Bundone, L. and Scheinin, A.

The present report is submitted by 'Delphis' as part of the project 'Monk seal protection at the Eastern Mediterranean' funded by MSA - Monk Seal Alliance and in collaboration with the Israeli Nature and Parks Authority, and Rosh Hanikra touristic site.

Abstract

After an absence of 50 years, that resulted in its classification as locally extinct, the Mediterranean Monk Seal (MMS) has returned to the Israeli coast. Since the first sighting in 2010, almost a hundred sightings have been documented. These sightings led to a comprehensive habitat survey. The main survey findings are alarming and point to the lack of suitable habitats for the MMS to return to our shores regularly. The caves required for their presence have collapsed or been intensively disturbed by humans. To enable the return of the MMS back to the Israeli waters, we suggest restoring suitable caves and creating new shelters in existing or newly built marine infrastructures.

Suitable habitats - historical background

Historical references on Mediterranean Monk Seal (MMS) presence along Israel's coast, date to the years 1927–1968, were concentrated in Rosh Hanikra on the Northern most point and ancient Tantara (Dor-Habonim) on the central coast, with evidence of breeding on the latter (Roditi-Elasar et al., 2020*).

Since 2010, almost 100 sightings were reported and indications of spillover from the north, along with the population growth, raised the need to reevaluate the suitable habitats for the species along the Israeli coast. Therefore, a survey aimed to identify potential suitable habitats for MMS was performed in the years 2015 and 2022, focusing on areas of historical sightings (fig. 1, in red) and present sightings (fig. 2 and fig. 1, in green).

* Roditi-Elasar, M., Bundone, L., Goffman, O., Scheinin, A. P. and Kerem, D.H. 2021. Mediterranean monk seal (*Monachus monachus*) sightings in Israel 2009-2020: Extralimital records or signs of population expansion? Marine mammal Science 37: 344-351. DOI: 10.1111/mms.12734

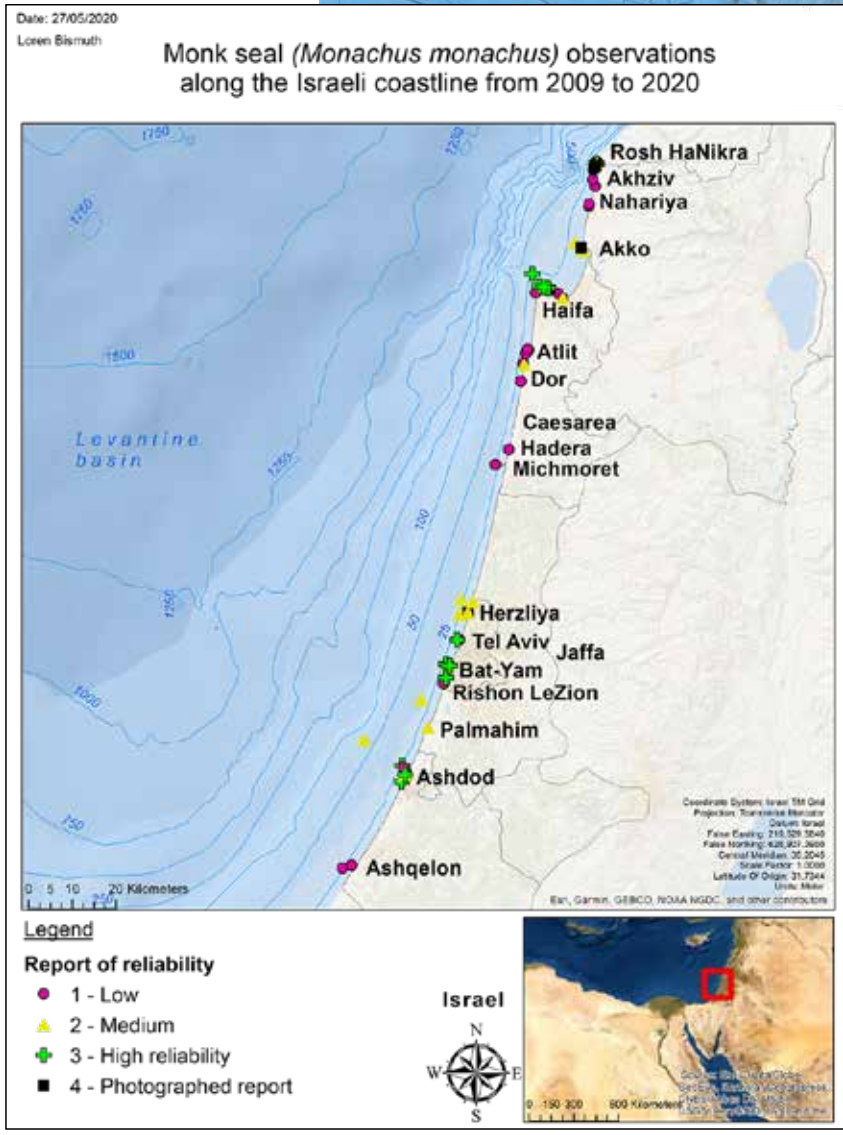
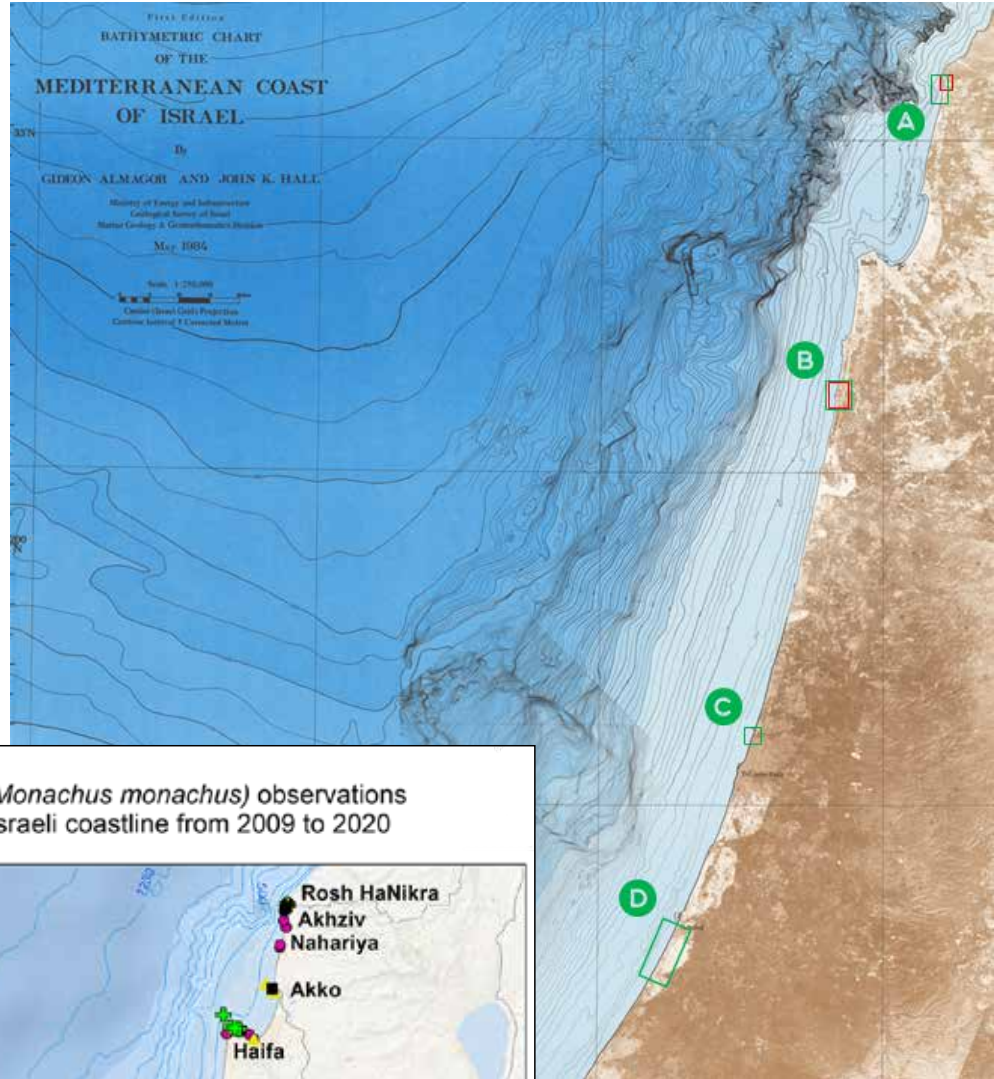


Fig 1: surveyed areas (A-D). Historical sighting areas in red. Present sighting areas in green

Fig 2: Mediterranean Monk seal observations along the Israeli coast in the years 2009-2020



Suitable habitats - present days

Area A - Rosh Hanikra

Area A is part of the oldest and biggest Rosh Hanikra-Akhziv marine protected area (MPA), located close to the Lebanese border. The 'no take' MPA extends from the coast, up to 15 km seawards, and includes rocky beaches and caves. The surveyed area includes the northern caves of Rosh Hanikra (fig. 3a) and Akhziv islets (fig. 3b). Human presence in the water is prohibited after dark in Area A. The main cave in the Rosh Hanikra touristic site is accessible only from the seaside (fig. 4) but there is a touristic walking trail that passes through it (fig. 5).



Fig 3: (a) Rosh Hanikra caves
(b) Akhziv islets



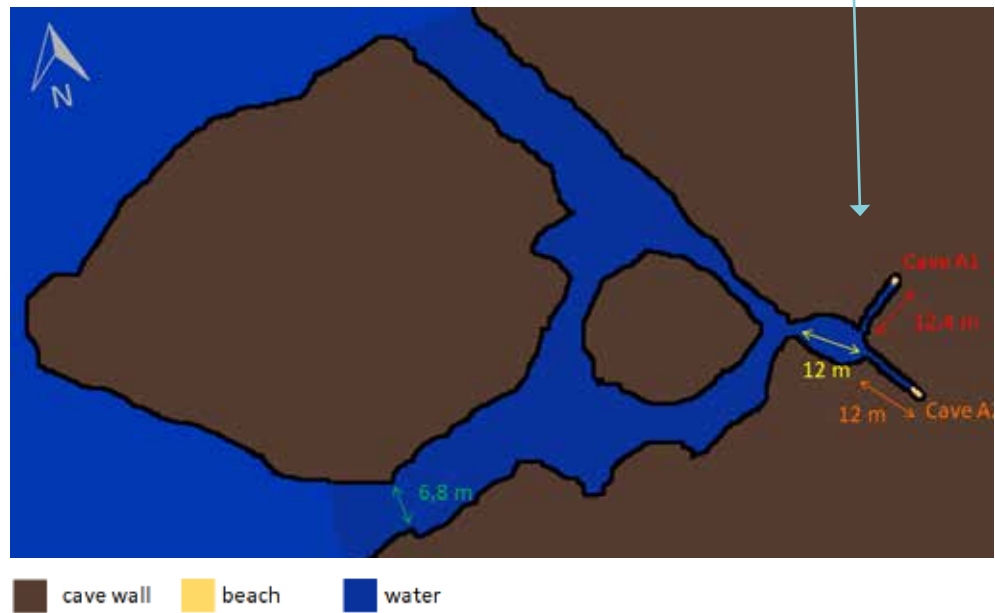
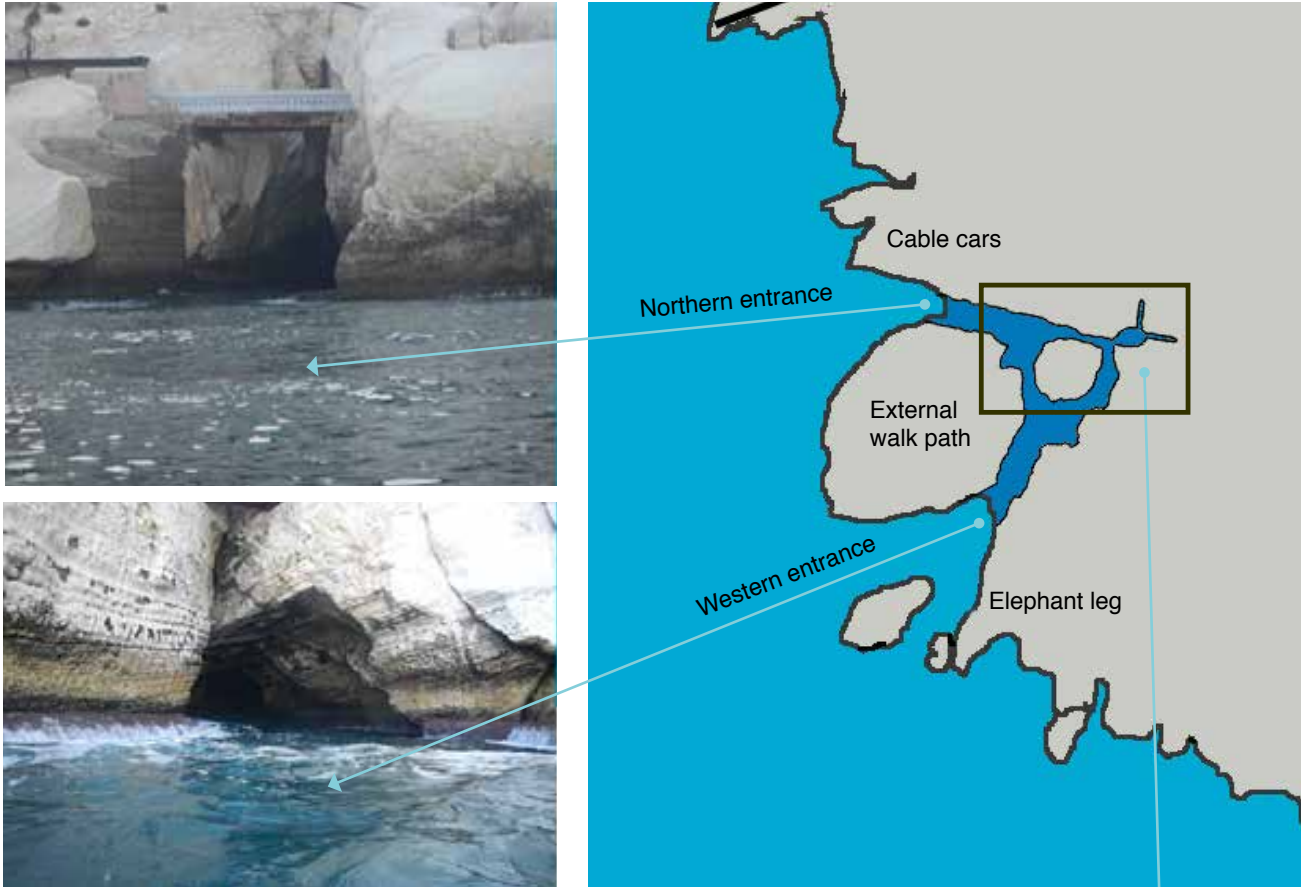


Fig 4: Rosh Hanikra main cave and its entrances



Caves A1 and A2 branch off the main cave (fig. 5). Both are potential resting caves, with an entrance hidden from land.

A1. 33°5'35"N 35°6'16"E

Cave A1 is a rocky cave, the entrance is above sea level and the syphon covered with >50 cm of water (fig. 6). The cave has a constant, small pebble beach (fig. 7). Trap cameras were placed in the cave for total of 10.5 months (intermittent activity) in 2015-2017, with no evidence of seal presence.

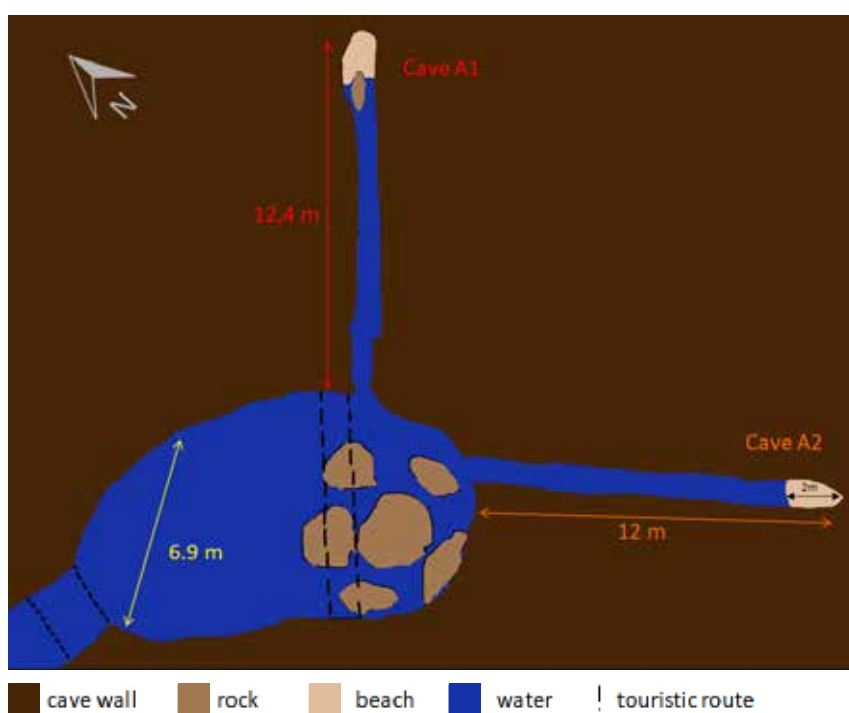


Fig 5: caves A1 & A2 branches off the main cave



Fig 6: Cave A1 syphon



Fig 7: Cave A1 beach



A2. 33°5'35"N 35°6'16"E

Cave A2 is a potential resting cave, which shares the main entrance with cave A1. The syphon size and volume, and water coverage change constantly due to wave driven sediment transport (fig. 8). A pebble beach, two meters long, fills with debris in storms (fig. 9). Trap cameras were placed in the cave for total of 9 months (Intermittent activity) in 2015-2016, with no evidence of seal presence.



Fig. 8: The entrance to cave A2 varies over time due to sediment transportation. October 2015 on the left and September 2016 on the right



Fig. 9: Dry platform in cave A2 in October 2015



A3. 33°5'28"N 35°6'20"E

Cave A3 is a potential cave for restoration, in Rosh Hanikra MPA. The entrance to the cave is above sea level and hidden by rocks that collapsed from the nearby cliff (fig. 10). The cave has rocky platforms in two levels (fig. 11): the lower level is covered with water in high tides and the higher level (4.5x2 m and 1.4 m high) can artificially upgraded to accessible, dry platform.



Fig. 10: Entrance to cave A3



Fig 11: Inner view and sizes of cave A3





A4. 33°5'28"N 35°6'21"E

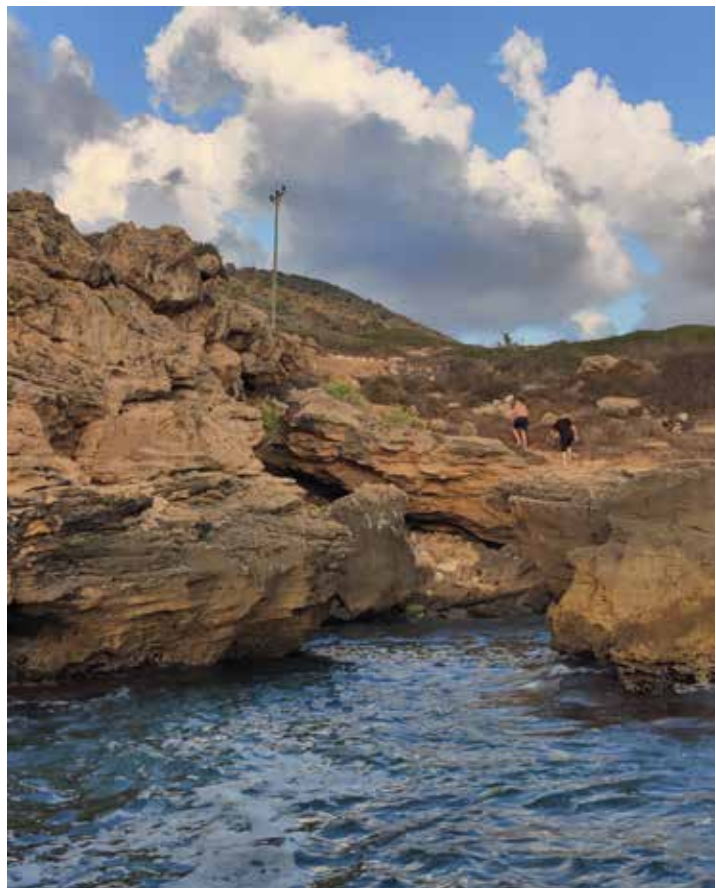
Cave A4 is a potential cave for restoration, in Rosh Hanikra MPA, adjacent to cave A3 (fig. 12). The entrance to the cave is above sea level, with 15m long ceiling-less syphon (fig 13). The cave is 3.8 m high with 15.5 m wide pebble beach, which is covered at the moment with rocks that have collapsed from the cave ceiling in the late 90's (fig. 14). The cave is known

only by locals and forbidden for fishing, therefore has a low anthropogenic pressure. Building an artificial ceiling and removing the falling rocks, will turn this cave to an optimal cave for resting and even breeding.



Fig 12: Entrance to caves A3 & A4

Fig 13: Ceiling-less syphon to cave A4



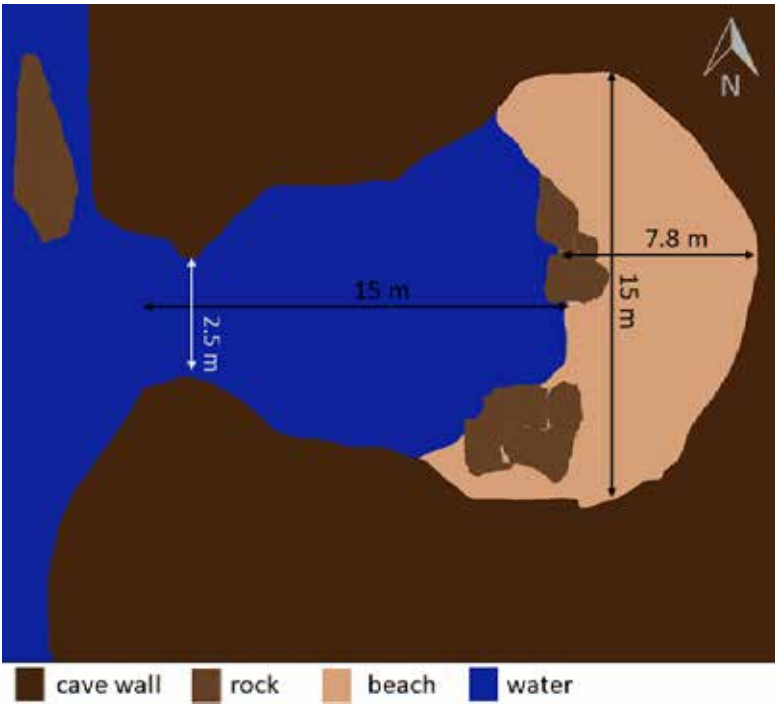


Fig 14: Inner view and sizes of cave A4



A5. 33°4'17"N 35°5'40"E

The islet 'Nachlieli' in Rosh Hanikra MPA, 1.2 km west to the coast (fig. 15) surrounded by abrasion platforms, some covered by coarse sand (fig. 16), offers resting platforms for seals. The center of the islet is mostly covered by water (fig. 17).



Fig 15: Islet Nachlieli from above

Fig 16: Dry sandy platform offering a resting spot for seals



Fig 17: Most of the islet area is covered by water





Area B - Habonim to Ma'agan Michael

The coast in area B stretches along the limestone ridge and is declared, for the most part, as MPA (fig. 18). The coastal ridge is studded with small dens, where even the largest (fig. 19) are flooded during high tides. West to the coast, at a short distance and accessible to the public, are several islets (fig 20).



Fig 18: Area B - Habonim to Ma'agan Michael

Fig 19: Potential resting caves in area B



Fig 20: Islets of Ma'agan Michael



B1. 32°37'30"N 34°55'9"E

Cave B1 is a potential resting cave in a low limestone ridge, within a declared MPA. The entrance to the cave is above sea level (fig. 21), with a 10° slope leading to an internal platform (fig. 22), which is flooded at high tide. Average internal cave height - 1 m.



Fig 21: Entrance to cave B1

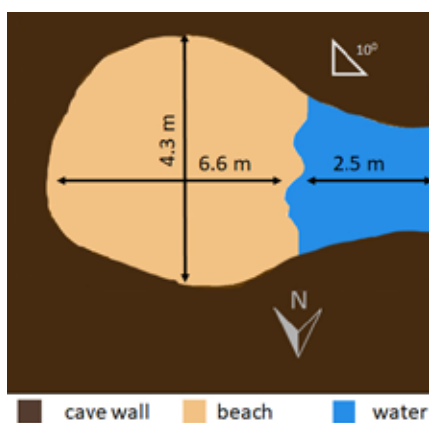


Fig 22: Inner view and sizes of cave B1



B2. 32°37'31"N 34°55'9"E

Cave B2 is a potential resting cave in a low limestone ridge, within a declared MPA. The entrance to the cave is above sea level (fig. 23), with a 20° slope leading to an internal platform (fig. 24). The channel connecting the cave to the sea is 5.6 m long and covered with very shallow water (fig. 25). The cave height varies from 50 cm at the entrance, to 93 cm above the platform. The cave also features a hole in the ceiling, 20 cm in diameter, on the left side, above the platform.



Fig 23: The entrance to cave B2 from outside (a) and inside (b)



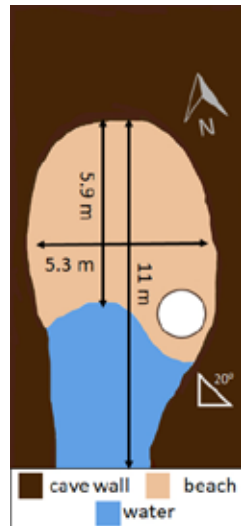


Fig 24: Inner view of the platform (up and down) and sizes of cave B2



Fig 25: The channel connecting cave B2



B3. 32°33'19"N 34°54'9"E

The islet of Ma'agan Michael (fig. 26) does not have any marine caves, however, it might represent a temporary resting shelter for passing by seal. The islet is in a relatively less-populated area and at a distance of 200m from the coast, allowing resting animals to dive back into the sea if alarmed by approaching visitors. The islet is surrounded by a rocky

platform at sea level, which is easily approachable for MMS, in addition to one sandy beach, 4x3 m in size, with a 10-15 slope (fig. 27).



Fig 26: Ma'agan Michael islet

Fig 27: Potential resting beach B3





Area C - Herzliya

The first documented sighting of MMS in Israel in the 20th century was from the Herzliya Marina wave breaker (fig. 28). A female MMS was photographed sleeping in one of the spaces created between the wave breaker's tetrapod structures (fig. 29) in January 2010. Since then, five more sightings were reported from the Herzliya Marina area, suggesting further use of the wave breaker. Creating artificial caves in man-made marine infrastructure, in appropriate areas, is a possible solution for the lack of suitable habitat for the MMS, enabling their return to Israeli waters.



Fig 28: MMS female documented in Israel, Jan 2010 (Shmulik Landau)

Fig 29: Marina Herzliya wave breaker



Area D - Ashdod-Ashkelon

The southern coast of Israel is characterized by sandy beaches (fig. 30), a considerable part of them not accessible to the public (military zones; fig. 31), therefore they might be used by MMS as resting beaches. In addition, a high number of observations was received from the Ashdod Port (one of them photographed), which is surrounded by wave breakers built from tetrapods that create artificial shelters (fig. 32).



Fig 30: Sandy beach strip between Ashdod and Ashkelon (Area D)



Fig 31: Beaches offering resting areas for seals in area D



Fig 32: Ashdod port
wave breaker

Summary

The survey findings indicate a lack of suitable caves along the Israeli coastline, due to the collapse of limestone cliffs, flooding of caves as a result of sea level rise, and an increasing trend in tourism pressure. Either way, animals that reach the Israeli coast will find only a few lairs that are suitable for a short rest and nothing more. To encourage the establishment of the species in our area and possibly contribute to the recovery of MMS populations, we recommend combining restoration of suitable existing caves (see habitats A3 & A4) and creating artificial caves in existing marine structures undergoing renovation, or in new marine infrastructure that will be built in the future.



Thank you!

