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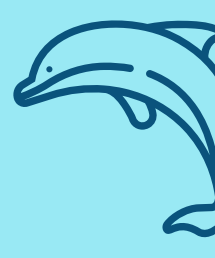
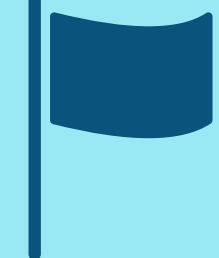
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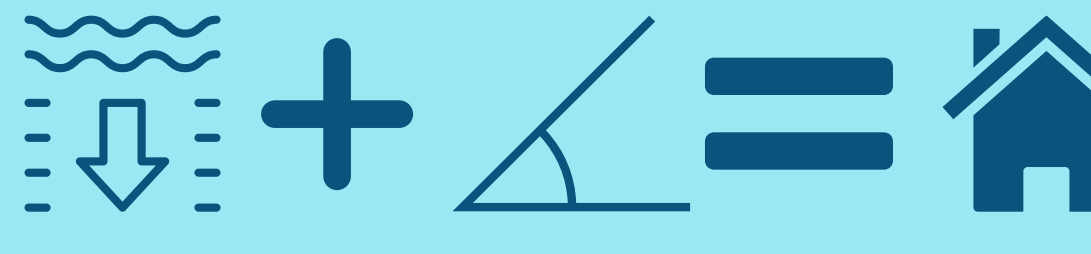


SHOULD GARRAF'S SUBMARINE CANYONS BE PROTECTED?

STUDY OF THE DISTRIBUTION OF BOTTLENOSE, STRIPED AND RISSO'S DOLPHINS



INTRODUCTION

 =  AND 

DOLPHINS ARE FLAGSHIP AND UMBRELLA SPECIES. PEOPLE ARE WILLING TO PROTECT THEM AND BY PROTECTING THEM WE ARE PROTECTING MANY MORE SPECIES AT THE SAME TIME (1, 2).

 +  = 

PHYSICAL CHARACTERISTICS SUCH AS DEPTH, SLOPE, ROUGHNESS OR DISTANCE FROM COASTLINE CAN INFLUENCE THEIR DISTRIBUTION (3, 4).

 = 

EFFECTIVE CONSERVATION OF THESE ANIMALS DEPENDS ON DESCRIBING AND UNDERSTANDING THEIR HABITAT (5).

OBJECTIVE 1

CREATE A DISTRIBUTION MODEL FOR THE STUDIED SPECIES BASED ON SLOPE AND DEPTH

OBJECTIVE 2

RELATE THE CALCULATED DISTRIBUTION PATTERNS TO THEIR FEEDING HABITS

OBJECTIVE 3

DISCUSS WHETHER A PROTECTED AREA SHOULD BE CREATED TO PROTECT THE SUBMARINE CANYON AREA

MATERIALS AND METHODS

"ASSOCIACIÓ CETÀCEA"

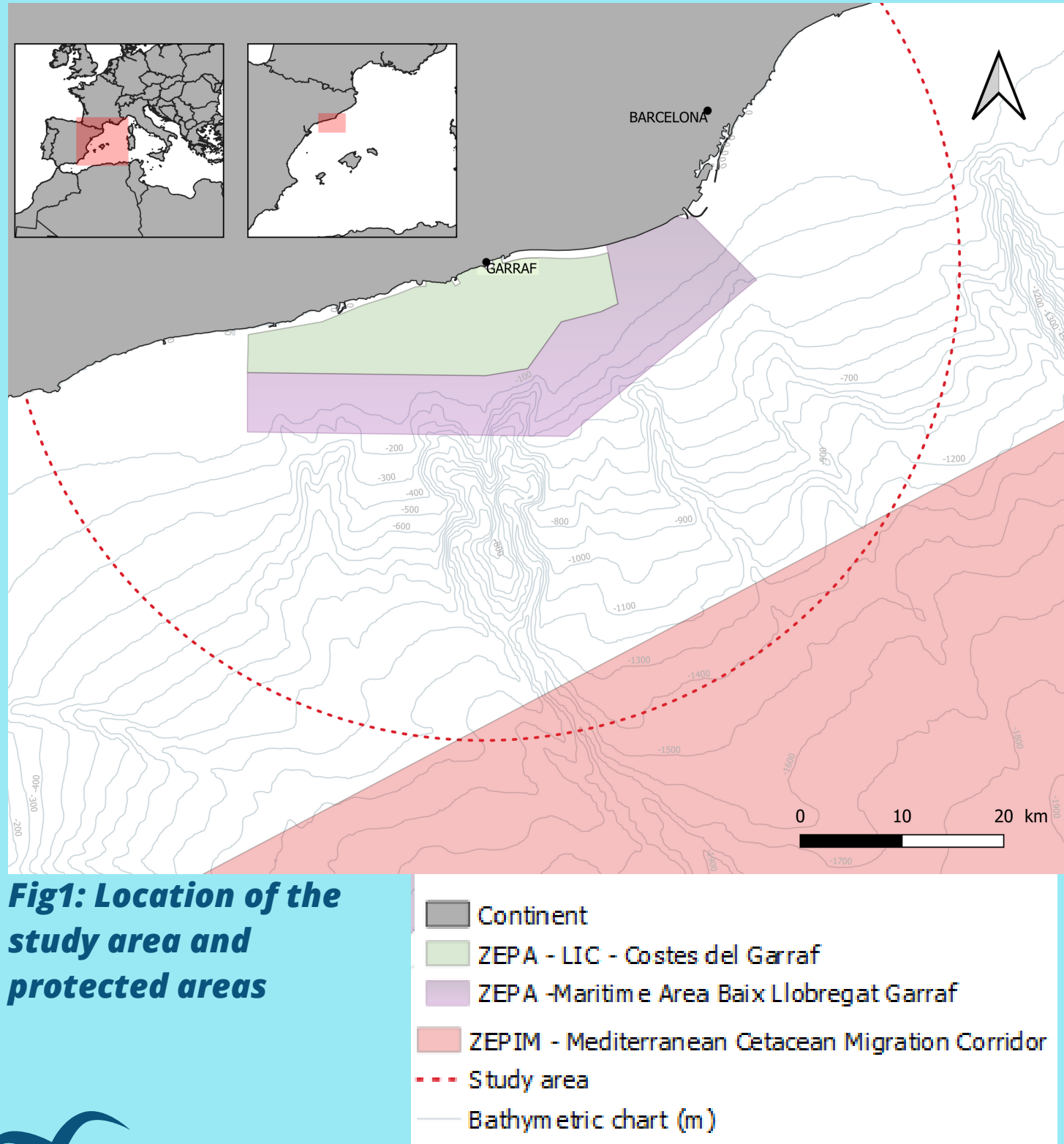
JANUARY 2017 → OCTOBER 2020

DEDICATED BOAT SURVEYS FROM GARRAF'S PORT
SAILING BOATS OBSERVATION HEIGHT OF 3 - 3.5 AMSL

DATA ONLY COLLECTED UNDER ADEQUATE WEATHER CONDITIONS (DOUGLAS < 3, NO FOG)
EVERY 20 MINUTES AND ON EVERY SIGHTENING WITH A GPS

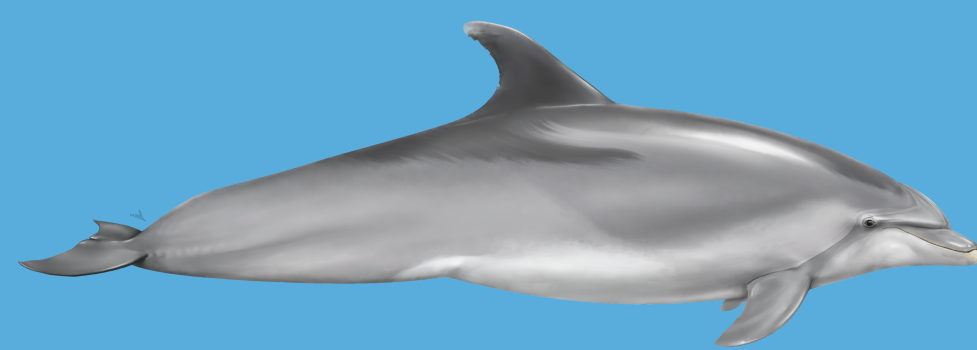
SOFTWARE	WHAT I DID	WHY I DID IT
QGIS	LOCATE EACH SIGHTING ON THE MAP ENRICH EVERY SIGHTING POINT	IN ORDER TO ENRICH THEM ENRICHED WITH VARIABLES INFORMATION
PAST	PCA	CORRELATIONS BETWEEN VARIABLES
RSTUDIO	SPEARMAN SHAPIRO-WILK KRUSKAL-WALLIS LEVENE TUKEY-KRAMER	CORRELATIONS BETWEEN VARIABLES NORMALITY SIGNIFICANT DIFFERENCES BETWEEN SPECIES HOMOGENEITY WHICH SPECIES HAS DIFFERENT VALUES
MAXENT	HABITAT MODELLING	WHICH AREAS ARE MORE SUITABLE

PARAMETERS	MEASUREMENT UNITS
SLOPE	DEGREES(°)
DEPTH	METERS (M)
ROUGHNESS	ROUGHNESS INDEX VALUE
DISTANCE FROM THE COASTLINE	METERS (M)



BOTTLENOSE DOLPHIN

TURSIOPS TRUNCATUS

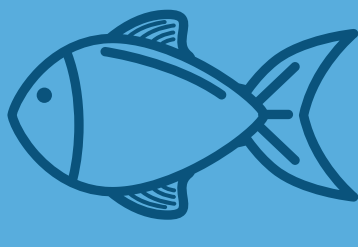


CONSERVATION STATUS



DIET (3)

MAINLY PISCIVOROUS
DEMERSAL


Merluccius merluccius

HABITAT SUITABILITY

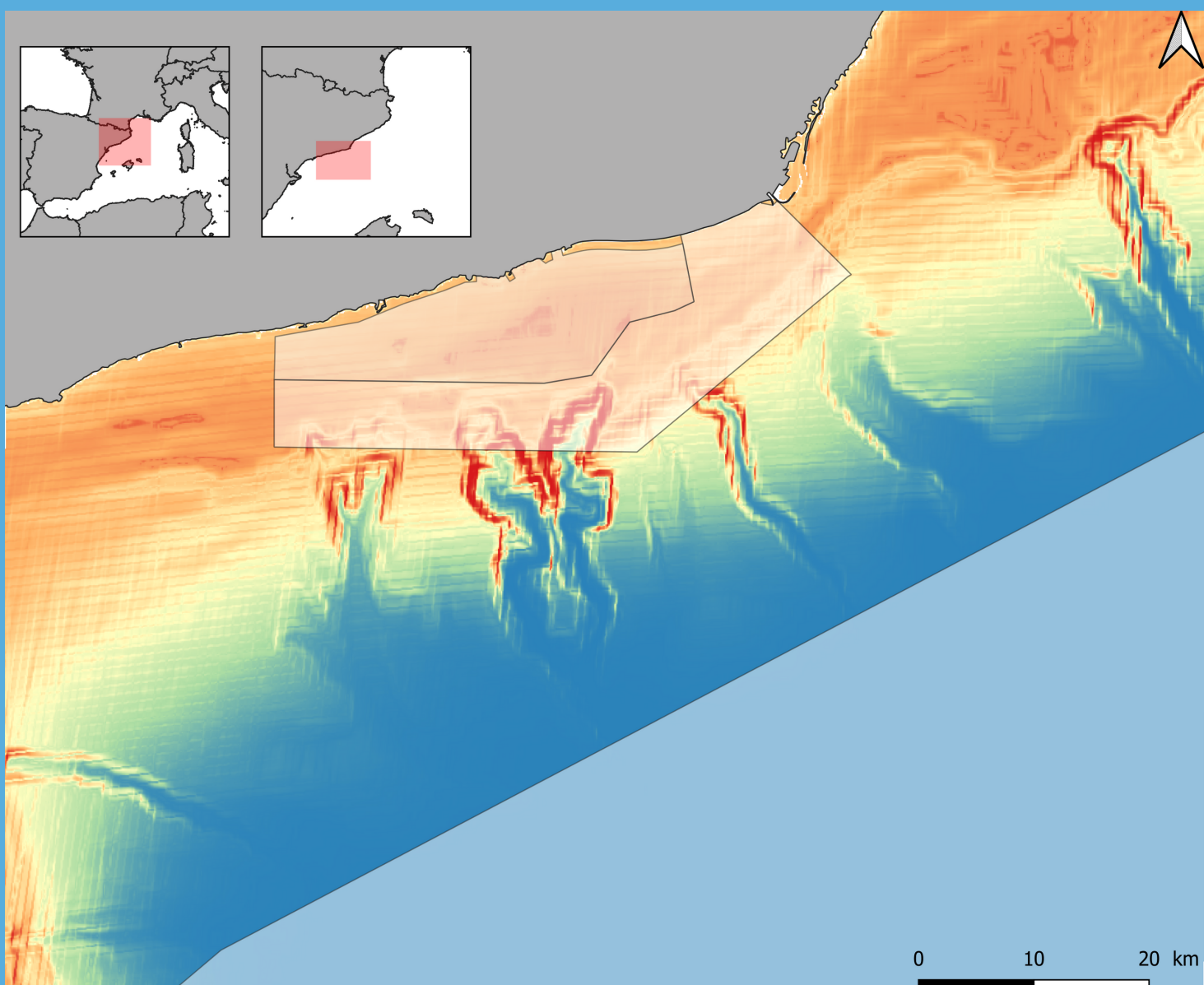
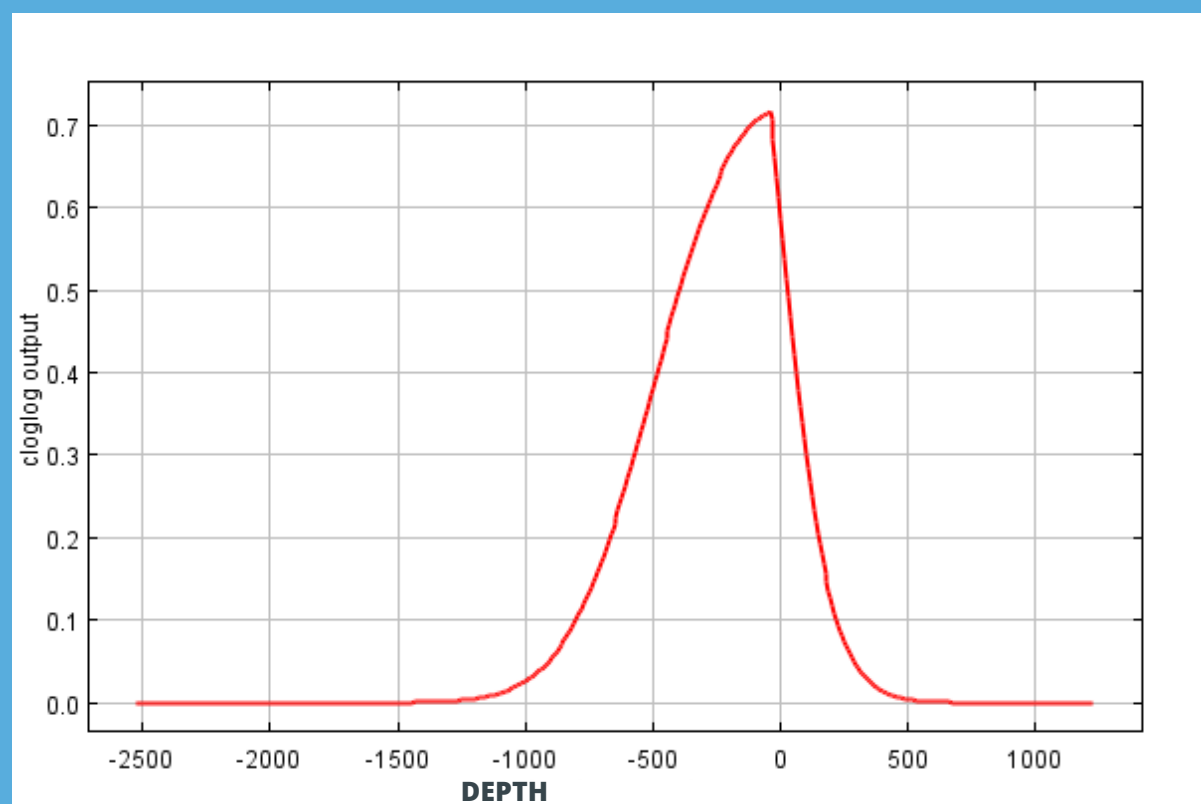


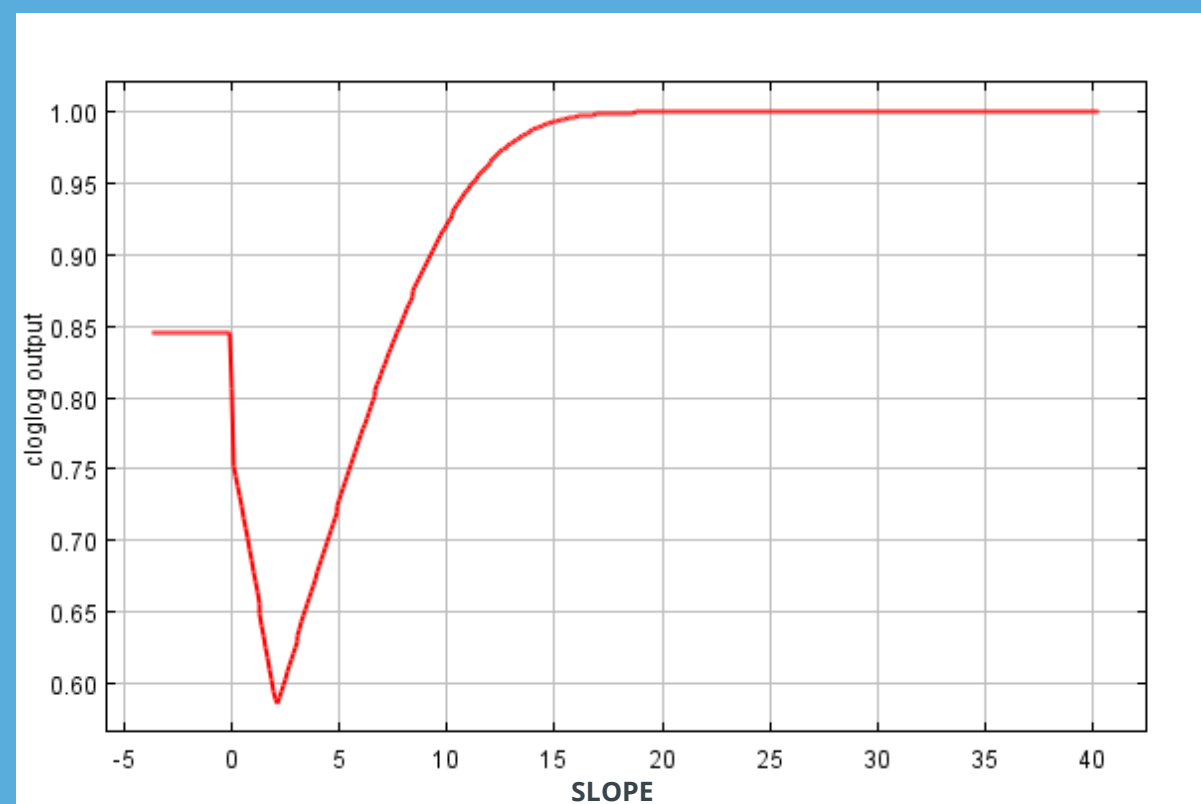
FIG. 2: Habitat suitability map of *Tursiops truncatus* created with the maximum entropy model. Warm colours indicate higher suitability.

PREFERRED DEPTH



BETWEEN 0 - 500 METERS
UP TO 1000 METERS

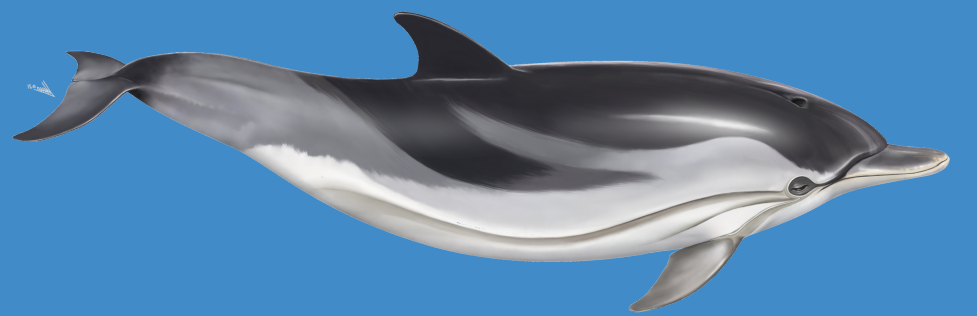
PREFERRED SLOPE



VERY LOW ≈ 0%
VERY HIGH > 10%

STRIPED DOLPHIN

STENELLA COERULEALBA

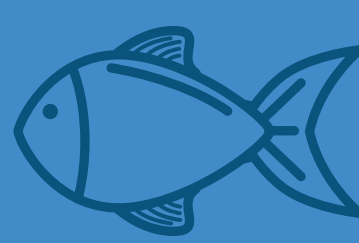
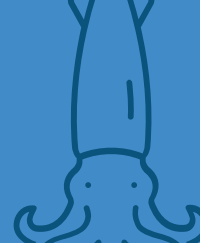


CONSERVATION STATUS



DIET (3)

OPORTUNISTIC
EPIPELAGIC MESOPELAGIC
PELAGIC MESOPELAGIC

HABITAT SUITABILITY

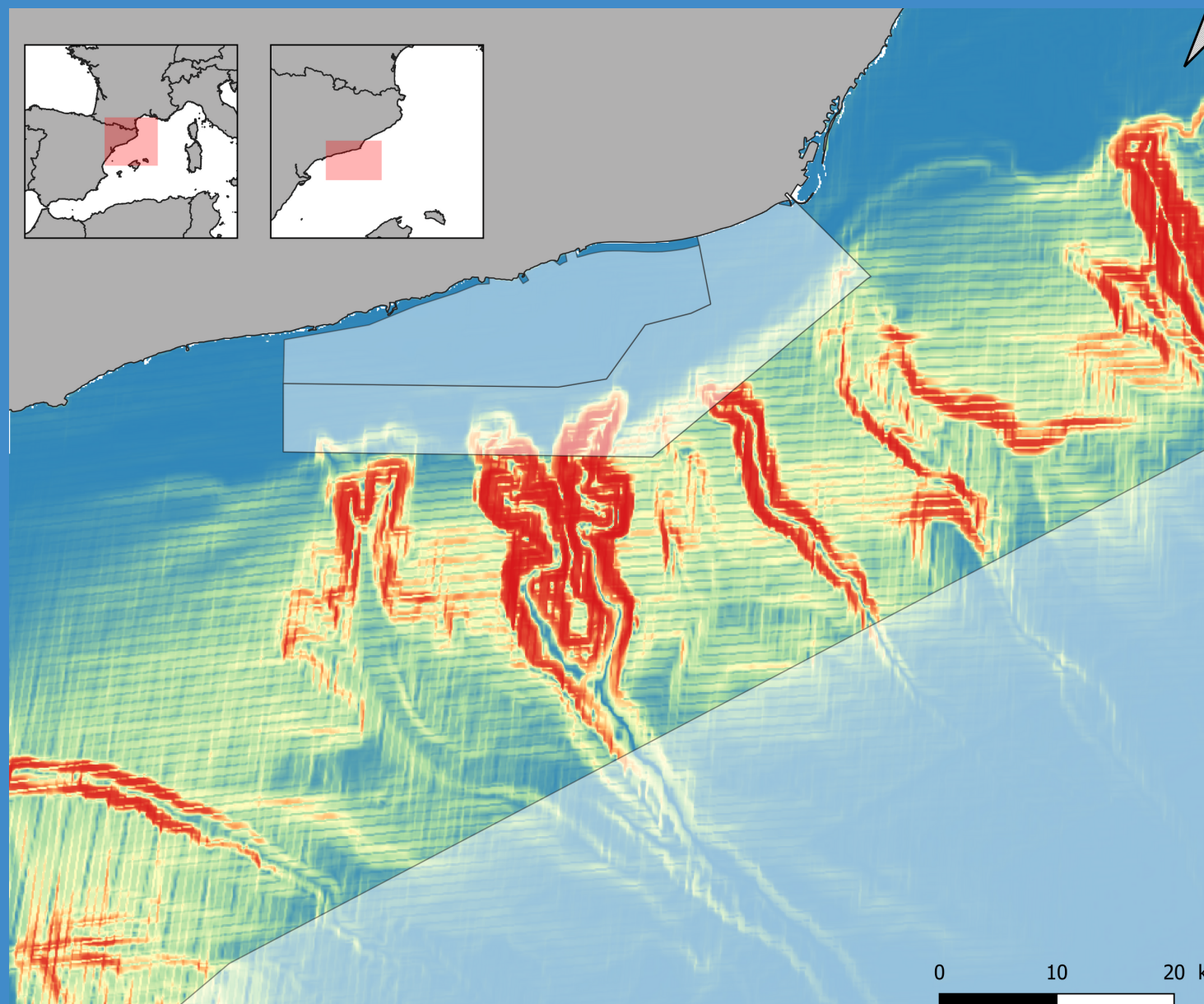
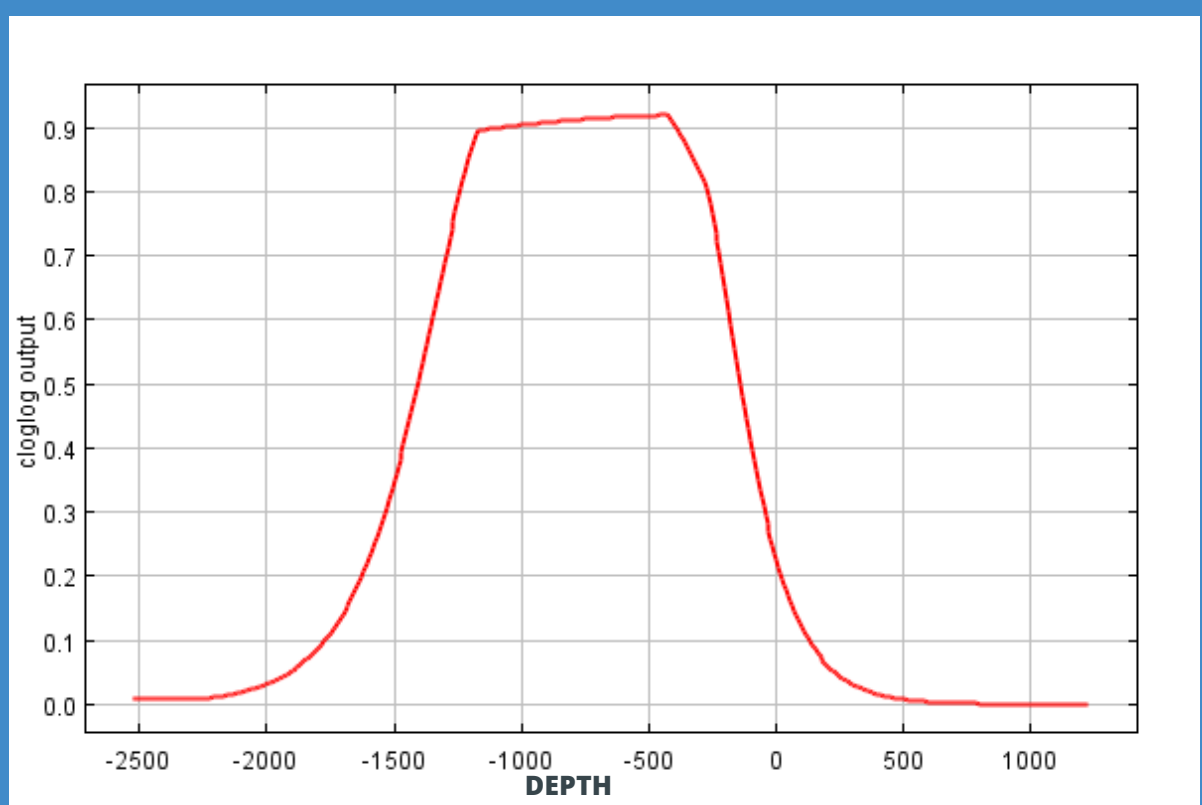


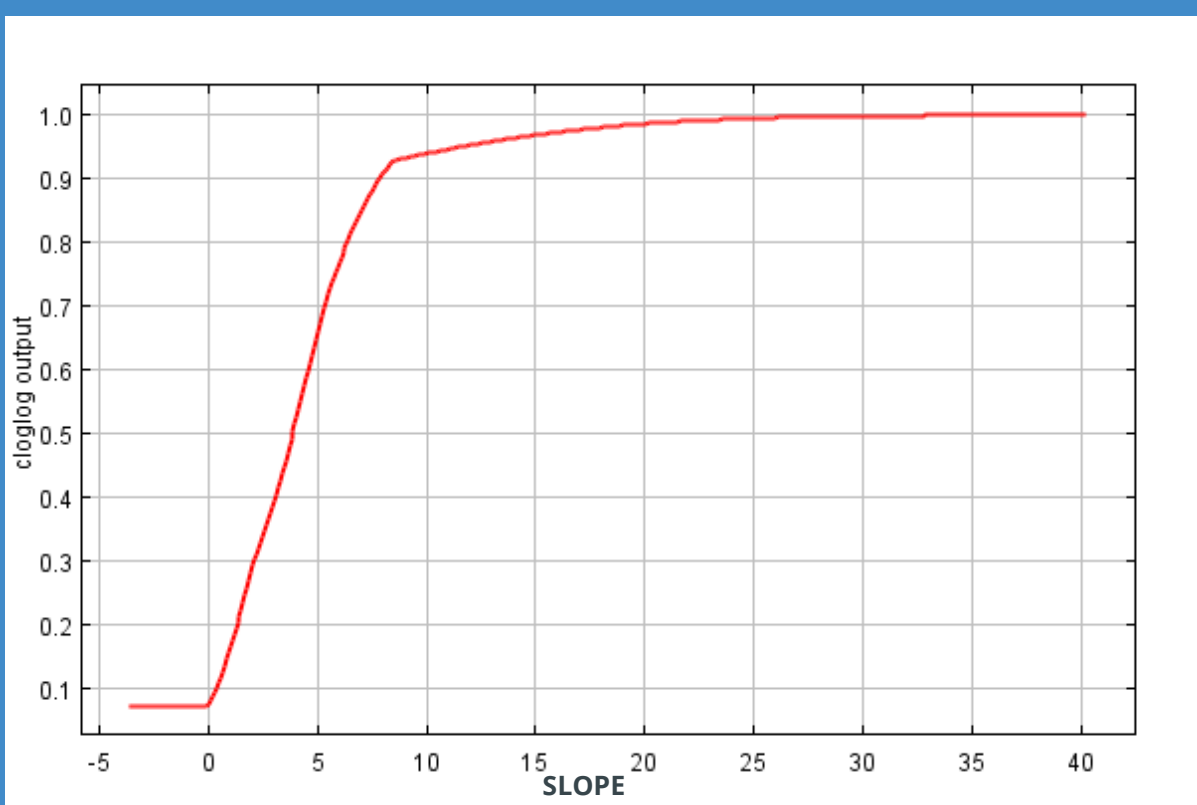
FIG. 5: Habitat suitability map of *Stenella coeruleoalba* created with the maximum entropy model. Warm colours indicate higher suitability.

PREFERRED DEPTH



BETWEEN 500 -1200 METRES

PREFERRED SLOPE



VERY HIGH > 10%

RISSO'S DOLPHIN

GRAMPUS GRISEUS




CONSERVATION STATUS



DIET (3)

TEUTOPHAGIC
BATHYPELAGIC MESOPELAGIC



HABITAT SUITABILITY

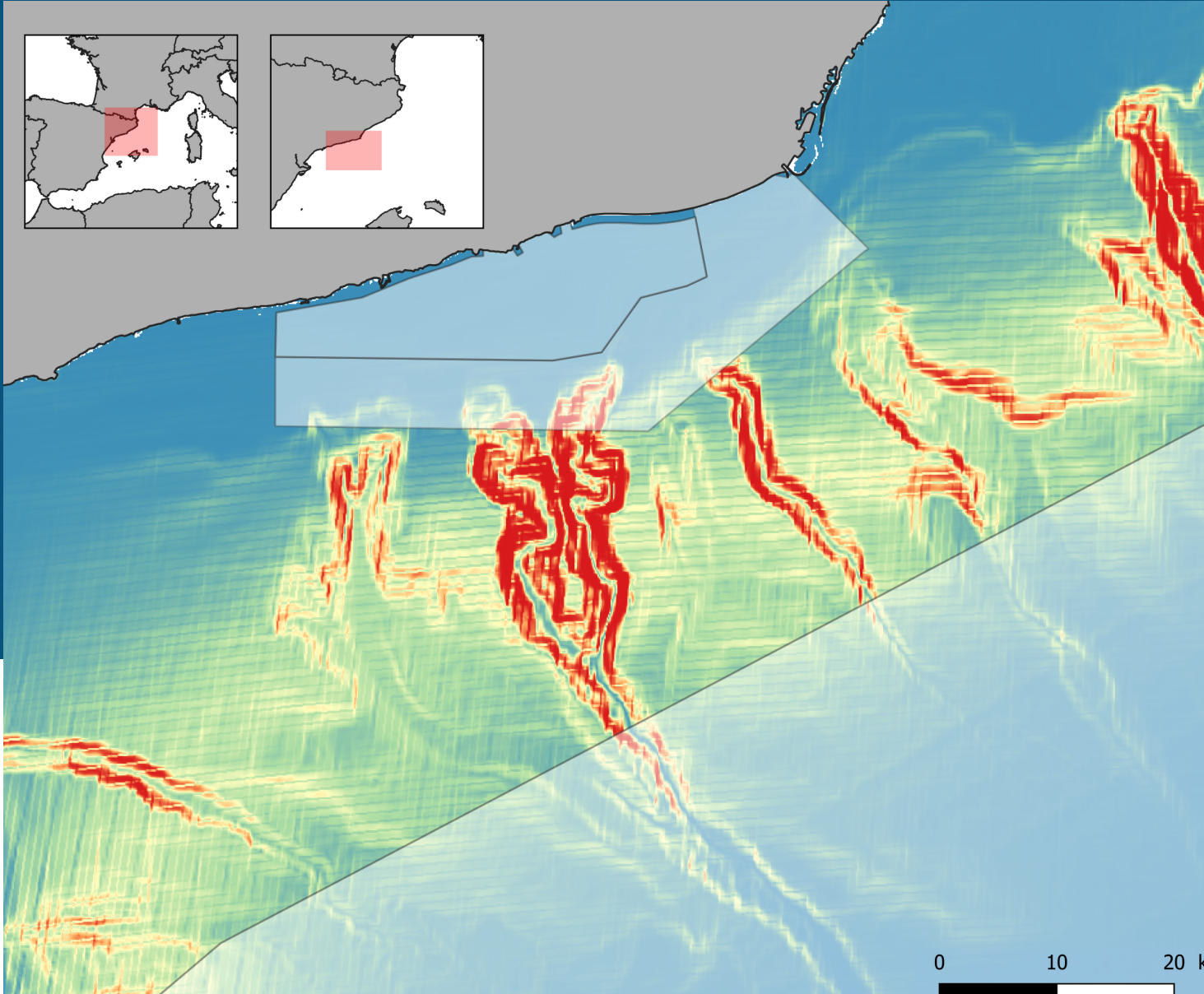
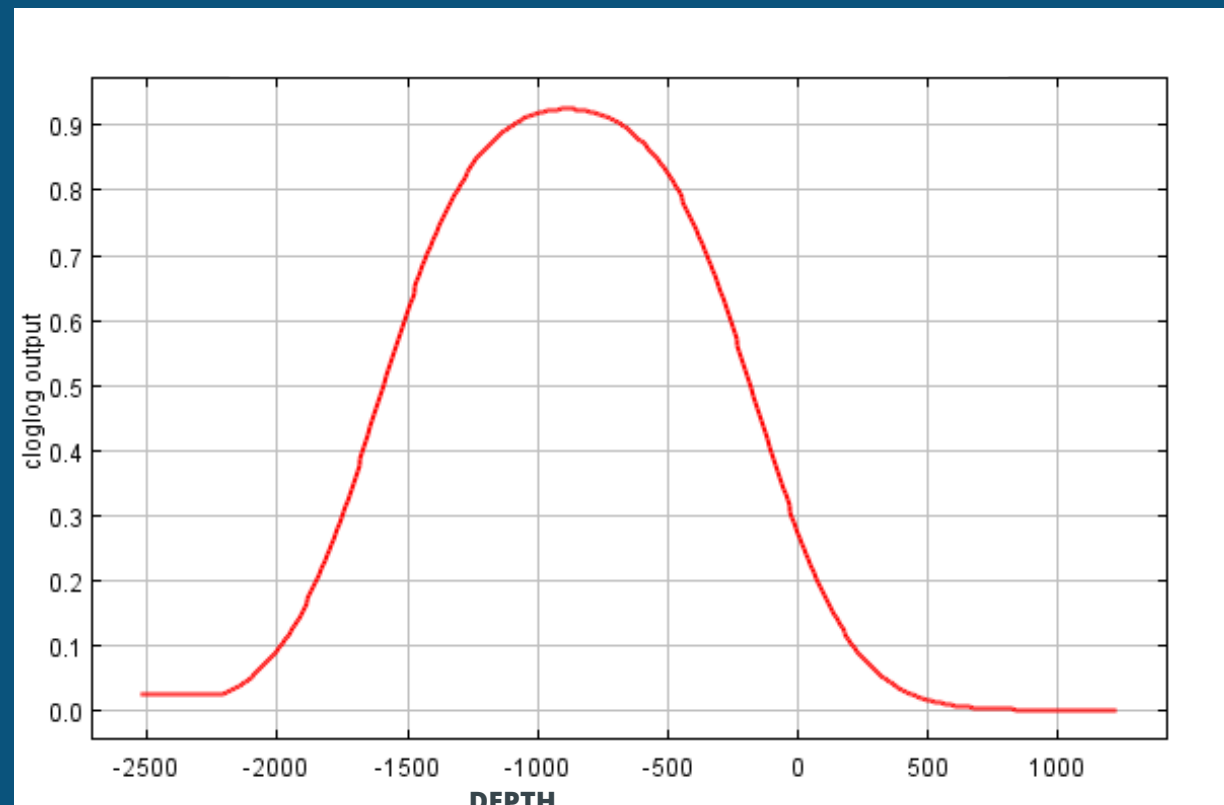


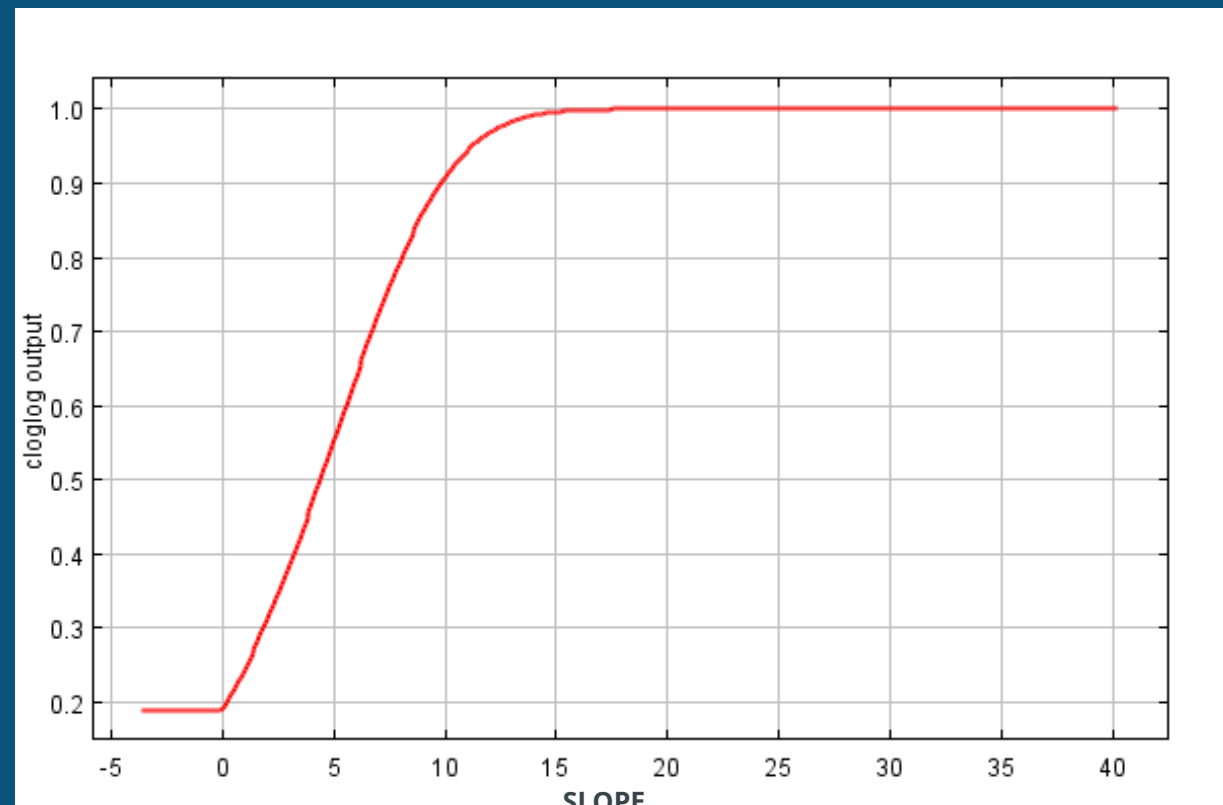
FIG. 8: Habitat suitability map of *Grampus griseus* created with the maximum entropy model. Warm colours indicate higher suitability.

PREFERRED DEPTH



BETWEEN 500 -1500 METERS
UP TO 2000 METERS

PREFERRED SLOPE



VERY HIGH > 10%

DISCUSSION

1. GARRAF SUBMARINE CANYONS ARE A SUITABLE HABITAT FOR DOLPHINS ACCORDING TO THE PREDICTED MODEL
2. PREDICTED DISTRIBUTION COINCIDES WITH DOLPHIN FEEDING HABITS
3. GARRAF SUBMARINE CANYONS SHOULD BE PROTECTED AS THEY ARE HOME TO SEVERAL SPECIES OF DOLPHINS THAT ARE VULNERABLE OR WITHOUT SUFFICIENT DATA.

BIBLIOGRAPHY

