

INTERNATIONAL COMMISSION FOR THE
CONSERVATION OF ATLANTIC TUNAS



COMMISSION INTERNATIONALE POUR LA
CONSERVATION DES THONIDES DE L'ATLANTIQUE

COMISION INTERNACIONAL PARA LA
CONSERVACION DEL ATUN ATLANTICO

Madrid, 27 April 2021

ICCAT GBYP CIRCULAR # G-0285/2021

SUBJECT: CALL FOR TENDERS ICCAT GBYP 03/2021 - PILOT AERIAL SURVEY INCORPORATING DIGITAL SYSTEMS FOR THE MONITORING OF BLUEFIN TUNA SPAWNING AGGREGATIONS IN THE BALEARIC SEA (ICCAT GBYP - PHASE 10)

I should like to transmit the Call for Tenders ICCAT 03/2021 - Pilot Aerial survey incorporating digital systems for the monitoring of bluefin tuna spawning aggregations in the Balearic Sea, under the Atlantic-Wide Research Programme for Bluefin Tuna.

I would be grateful if you could distribute this Call for tenders to qualified people and institutions that might be interested.

Please accept the assurances of my highest consideration

Executive Secretary



Distribution:

- Commission Officers:

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First Vice Chair:	S. Depypere	PWG Chair:	N. Ansell
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- Head Delegates/Head Scientists

- Cooperating Parties, Entities, or Fishing Entities

Attachment: Call for Tenders 03/2021.



CALL FOR TENDERS ICCAT GBYP 03/2021

PILOT AERIAL SURVEY INCORPORATING DIGITAL SYSTEMS FOR THE MONITORING OF BLUEFIN TUNA SPAWNING AGGREGATIONS IN THE BALEARIC SEA (ICCAT GBYP – PHASE 10)

GBYP aerial surveys objectives and background

The main objectives of the ICCAT Atlantic-Wide Bluefin Tuna Research Programme (GBYP) are to improve: (a) the understanding of key biological and ecological processes, (b) current assessment methodology, (c) the management procedures, and (d) advice.

Key tasks are to reduce uncertainty in stock assessment and to provide robust management advice. This requires improved knowledge of key biological processes and parameters. Currently almost all the data used in stock assessments are obtained from fisheries-dependent data, which can be affected by changes in exploitation patterns and TACs. It is therefore important to obtain data from alternative sources, such as fishery independent indices, in order to verify the assumptions made when conducting the assessments or to improve the current data sets used in OM or MSE.

Therefore, one of the major research tasks under the ICCAT Atlantic-Wide Research Programme for Bluefin Tuna (GBYP) has been the aerial survey for spawning aggregations (AS), which has already been carried in 2010, 2011, 2013, 2015, 2017, 2018 and 2019 (all documents are available [here](#)), aiming to provide a fishery-independent index of relative abundance of spawning stock biomass.

The GBYP AS has faced numerous logistical challenges, which have resulted in changes in survey design and data processing to standardize methodologies and improve the accuracy of the index. In 2019 a global reanalysis of the whole time series was carried out in order to further refine the database and generate an improved index time series based on fully standardized analytical procedures.

However, the new index time series exhibited substantial differences from prior time series, and still showed a high interannual variability between and within areas, which raised new concerns about the estimation procedures and the overall efficacy of the survey. Consequently, a new in-depth revision of the whole GBYP AS program was carried out in 2020 by two external experts (Vølstad 2020; Buckland 2020), who detected some inconsistencies in the currently available AS index time series and presented several recommendations for its improvement, which were considered by the SCRS Species Group. One of these recommendations was to start moving to digital observing and counting systems to substitute human observers-based system, and another one to extend if possible the surveyed areas.

Consequently, considering the discussions and recommendations on these issues carried out within the framework of the SCRS Bluefin Tuna Species Group in its intersessional meeting held in April 2021, the GBYP Steering Committee has decided to carry out a pilot survey in the Balearic sea area. The AS index from this area has been the only one considered for MSE up to now. Also, this area is the most suitable, from the logistic and financial point of view, for carrying out this trial, aiming at evaluating the feasibility of using digital systems for the monitoring of BFT spawning aggregations and its accuracy and precision, as compared to the classic human observers-based system.

Funds will be made available under GBYP Phase 10, for covering the related costs.

Consequently, this Call for tenders is launched, for public or private entities, be it scientific institutions or interested companies, for the submission of proposals to carry out the full project, detailed in the following paragraph.

Contractor tasks

The Contractor shall work in close consultation with the ICCAT GBYP Coordinator and the GBYP Steering Committee, and following the advice from an expert in aerial surveys with direct experience in the working area nominated by GBYP, who will participate as scientific observer on board the planes whenever required. The Contractor shall develop a paired pilot aerial survey in the Balearic Sea targeting BFT spawning aggregations, combining classic visual observations and recording of digital images. The survey will be conducted following the sampling strategy defined in the attached files, where the coordinates of several series of replicas of transects over an area “in” around Balearic islands and an area “out” surrounding the previous one, are defined.

The survey shall be conducted in the period from end of May to the beginning of July 2021. The spotting and digital image recording altitude will be 300 m. The distance covered in a one-hour flight should be about 100 nm, with about 6 on-duty flight hours per day. It is reasonable to take into account adverse weather forecasts for 20% of the days (bad weather conditions mean winds over 3 on the Beaufort scale, or low clouds at less than 300 m altitude, or heavy rain, which prevents reliable observation of tuna schools close to the sea surface). For the visual observations it is mandatory to apply the [aerial survey protocol](#). In parallel to the visual observations carried out by the professional and scientific spotters on board, high quality digital images will be recorded covering 100% of the surveyed transects “on effort” by an imaging system, preferably gyroscopically stabilized, able to geolocate and store all the images generated within the flights. The width of the surveyed strip will be no less than 600 m, and the resolution of the images no less than 5 cm by pixel, in any case enough for taxonomic identification of target individuals at species level. The stored images will be post processed for detection, identification and quantification of megafauna, focusing on BFT, generating a georeferenced database useful to calculate an aerial survey index following strip-transect methodology with Distance software.

The operational budget for this pilot campaign is sufficient for several replicates according to the survey design. The minimum number of replicates in area A “in” will be three, and one in area A “out”. The area “out” should be surveyed after the replica 2 of area “in”, or in combination to replicas 2 or 3 of area “in”, to optimize as much as possible the available survey time.

The offer is to specify the following: (a) type of aircraft (adequate for aerial spotting, possibly with upper wings, two propellers and good forward visibility, mandatorily equipped with bubble windows, one on each side); (b) availability of a pilot and a professional tuna spotter; (c) availability of two scientific spotters, belonging to scientific institutions that are independent from the fishing industries; d) survey time provided for each replica in areas “in” and “out”; availability of expert(s) for digital images postprocessing. The total number of days envisaged for field operations is 30, plus a maximum of 20% additional days as stand-by time for adverse weather conditions.

The Contractor shall provide a full GPS recording of all flights and sighting positions, together with the necessary way points when relevant. In addition to automated recording of images over the transects, all sightings by human observers shall be also documented with photos, preferably using a high resolution, geo-stabilised, GPS tagging, electronic camera. All photos shall be delivered along with the final report.

The Contractor shall provide, after the end of the field operations, a copy of the images recorded by the automated digital image system and the database resulting from the post-processing of such images.

The Contractor shall provide the sightings forms from visual observations to ICCAT GBYP, duly filled, at the end of each week (24 hours maximum after the last flight), in order to allow for real-time checks and corrections.

The awarded Contractor shall ensure the participation of one official representative, the pilot(s), the professional spotter(s) and the scientific spotters in a on line training course (1 day) to be held prior to the starting of field operations, possibly at short notice. Participation in the course is mandatory. The Contractor shall provide photos and the personal details of all the staff working on the survey before the training course.

Contractor minimum qualifications

- Documented multi-year experience in bluefin tuna studies and/or aerial surveys or censuses of marine populations; previous experience in tuna aerial survey is preferred.
- Availability of an adequate aircraft for aerial spotting, including a technical description of the aircraft equipped with two bubble windows (one on each side) and a digital high quality image recording system, preferably gyroscopically stabilized, able to provide the georeferenced high-resolution images described in the previous section, piloted by a licensed pilot having documented experience in this field.
- Availability of at least one professional tuna spotter, who has documented multiyear experience in this field.
- Availability of at least two scientific observers, preferably with previous experience in tuna fisheries or biology, aerial surveys and/or census of marine populations, and who pertain to scientific institutions or entities independent of the fishing industries and who hold a University degree in one of the following: Fisheries Science, or Marine Biology or Natural Sciences or Biological Sciences or Environmental Sciences or closely related fields. At least one of these spotters should have demonstrate experience in the use of the use of the automated digital image recording system.
- Availability of at least one expert in digital images postprocessing for identification and characterization of megafauna, specially BFT.
- Excellent working knowledge of one of the three official languages of ICCAT (English, French and Spanish). A good command of English is highly desirable.
- Bank or Insurance guarantee for the amount of the contract, to be provided before signature of the contract.

Request for bids

Interested entities **should submit an offer only** to the ICCAT Executive Secretary (camille.manel@iccat.int), with copy to Ms. Ana Martinez (ana.martinez@iccat.int) by **16 May 2021**, including:

- a) A detailed offer, describing in detail the type of spotting aircraft and the automated digital imaging recording system to be used for the survey, the methodology followed for the postprocessing of digital images, the minimum number of flight hours to be guaranteed in total, the maximum number of stand-by days, the date for the interim report and the date for the final report;
- b) The curricula of the pilot, the professional spotter and the scientific observers;
- c) The curriculum of the institution or company applying for the GBYP Pilot Aerial Survey 2021, with any documented experience in aerial survey or marine population survey, to include recent and relevant contracts for the same or similar items and other references (including contract numbers, points of contact with telephone numbers and other relevant information);
- d) A detailed estimated budget for the aerial survey, specifying the cost, including number of working days, to cover three replicates in area “in” and 1 replicate in area “out”, as well the cost and time of potential additional replicates in areas “in” and “out”. It should include also the estimated duration and cost of digital images post-processing tasks.
- e) The name, address, VAT/tax number and telephone number of the tendering body, along with the contact number of the person responsible for field activity;
- f) The institutional and administrative background of the tendering body (e.g. statutes, type of institution, annual budget, budget control procedures, etc.);
- g) If the aircraft proposed for the survey does not belong to the tendering body, then a declaration from its owner should be included, to define the availability of the aircraft for this duty and to ensure that the aircraft is properly insured for all risks by a primary insurance company; a copy of the subcontract or MOU should be also provided;
- h) A detailed list of any subcontracting activities;
- i) The declaration that the offering institution shall strictly follow the aerial survey design and the protocol provided by ICCAT GBYP prior to the beginning of the surveys, along with the forms to be used for the survey, and the administrative rules specified in the contract;
- j) A declaration that all the comments eventually made on the draft final report shall be incorporated in the final report;

- k) A completed copy of the operating license and authorization (if applicable) and any administrative document, released by the competent public authority, demonstrating that the offering institution is authorized to operate the aerial survey;
- l) A declaration that the offering institution shall provide an insurance guarantee for the full amount of the contract, before its signature;
- m) A declaration that the offering institution shall be covered by full insurance for the aerial survey to be carried out according to the Call for tenders, excluding ICCAT from all liability concerning the work to be carried out by each offering institution;
- n) Acknowledgment of this Call for tenders;
- o) A statement specifying the extent of agreement with all terms, conditions, and provisions herein included.

Offers that fail to furnish the required documentation or information, or reject the terms and conditions of the Call for tenders may be excluded from consideration.

Contractors can be either research institutions such as government or private laboratories, universities, or private consultancy firms or other entities having the required qualifications.

The Contractor shall be available to report to any meeting requested by ICCAT.

The Contractor shall take onboard an expert scientific observer appointed by ICCAT GBYP at any time, at short notice.

The ICCAT Secretariat shall make a selection of the offers and shall decide the contract to be awarded. The awarded entity shall be notified shortly afterwards.

Deliverables

1. The sighting forms and a report on automated image recording operations concerning the first week of activities to be submitted by e-mail the day after the first week of operations, at the latest, with the GPS tracks (electronic) and brief notes on specific problems.
2. The sighting forms and a report on automated image recording operations concerning the second week of activities to be submitted by e-mail the day after the second week of operations, at the latest, with the GPS tracks (electronic) and brief notes on specific problems.
3. The sighting forms and a report on automated image recording operations concerning the third week of activities to be submitted by e-mail the day after the third week of operations, at the latest, with the GPS tracks (electronic) and brief notes on specific problems.
4. The sighting forms and a report on automated image recording operations concerning the fourth week of activities to be submitted by e-mail the day after the fourth week of operations, at the latest, with the GPS tracks (electronic) and brief notes on specific problems.
5. The sighting forms and a report on automated image recording operations concerning the fifth week of activities to be submitted by e-mail the day after the fifth week of operations, at the latest, with the GPS tracks (electronic) and brief notes on specific problems.
6. The draft final report on field operations to be submitted at the latest by **10 July 2021**, including:
 - a) Full description of the work carried out during the aerial survey;
 - b) Detailed description of the methodology;
 - c) Detailed maps of the areas in which the aerial survey was carried out, according to the aerial survey design;
 - d) Maps with the GPS tracks of the survey, by date;
 - e) Detailed maps of the sightings, with GPS positions;
 - f) Full copy of the official sighting forms, complete with full details;
 - g) Complete copy of the photos and videos of visual observations taken during the survey (on appropriate digital storage medium), including their reference;

7. The draft final report on automated digital images recording to be submitted at the latest by **25 July 2021**, including:
 - a) Copy of recorded images
 - b) Database of raw results of image postprocessing tasks
8. Draft Final global Scientific report, to be submitted at the latest by **28 July 2021** including, besides the two aforementioned draft reports on field activities and post-processing operations,
 - a) A global Summary of main results, conclusions, problems encountered and recommendations for improvement of future surveys.
 - b) A PowerPoint presentation of such Summary for the ICCAT SCRS 2021 Bluefin Species Group Session or any other ICCAT SCRS meeting.
9. The definitive final report, to be prepared taking into account the eventual comments provided by ICCAT, and the full administrative report including copies of all administrative documents, to be submitted by **31 July 2021**, at the latest.

Payment details

Disbursements shall be made according to the following schedule:

1. 40% of the total amount of the contract upon signing of the contract;
2. 40% upon providing Deliverable No. 5;
3. 20% after the approval of the final report upon incorporation of comments made by ICCAT and the approval of the administrative documents.

Logistics

All documents provided by the Contractor must be in MS Word or compatible software, tables must be in Excel format or compatible, figures and pictures must be in JPEG or TIFF format or compatible. All documents submitted must be in English, French or Spanish.

Copyright

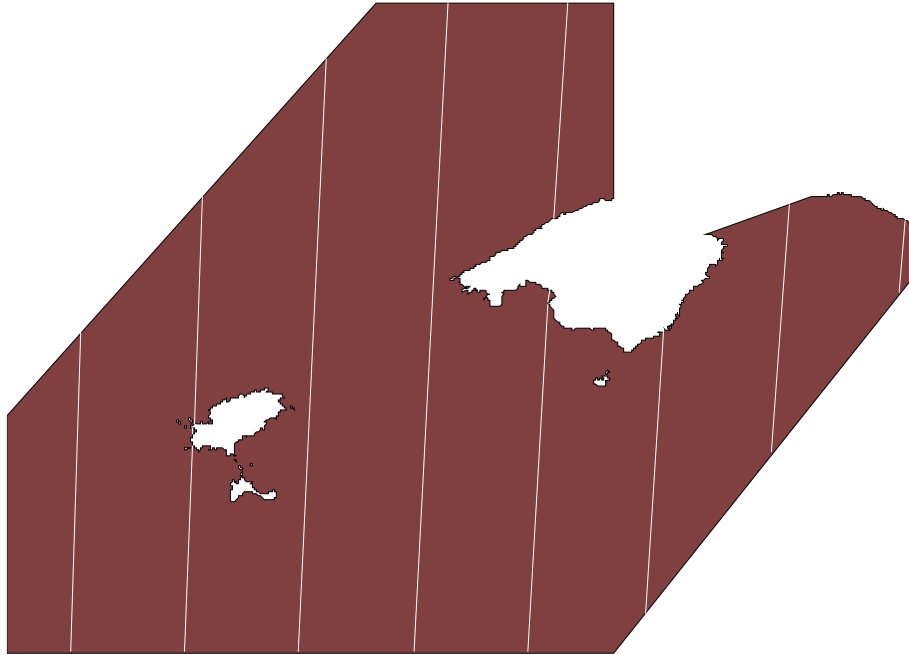
All of the material produced by the Contractor shall remain the property of ICCAT GBYP and it must be kept confidential.

References

- Buckland S.T. 2020. Independent peer review of the revision of GBYP aerial survey design, implementation and statistical analyses (ICCAT GBYP 12/2020) of the Atlantic-wide research programme for bluefin tuna (ICCAT GBYP Phase 10). Collect. Vol. Sci, Paps. ICCAT 77(2): 977-987.
- Vølstad J.H. 2020. Review of the revision of GBYP aerial survey design, implementation and statistical analyses (ICCAT GBYP 12/2020) of the Atlantic-wide research programme for bluefin tuna (ICCAT GBYP Phase 10). Collect. Vol. Sci, Paps. ICCAT 77(2): 988-1005.

Area A – Balearic Sea

IN - Replica 1



Sample layer name: Replica 1

Type of sampler: Line

Number of samplers: 8

List of samplers:

x-coord y-coord

Sampler 1

0.7072124 38.00261

0.7510964 39.35616

--

Sampler 2

1.18965 38.00578

1.223444 38.8756

--

1.225183 38.9196

1.226264 38.94691

--

1.226866 38.96213

1.266103 39.93437

--

Sampler 3

1.672063 38.00697

1.789901 40.51007

--

Sampler 4

2.154405 38.00617
2.302854 40.73841

--

Sampler 5

2.636629 38.0034
2.724313 39.47151

--

2.724796 39.47936
2.727942 39.53037

--

2.746509 39.82922
2.804463 40.73818

--

Sampler 6

3.129596 38.16723
3.208869 39.35724

--

3.209051 39.35991
3.209705 39.36948

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Sampler 7

3.662232 38.84454
3.741367 39.89382

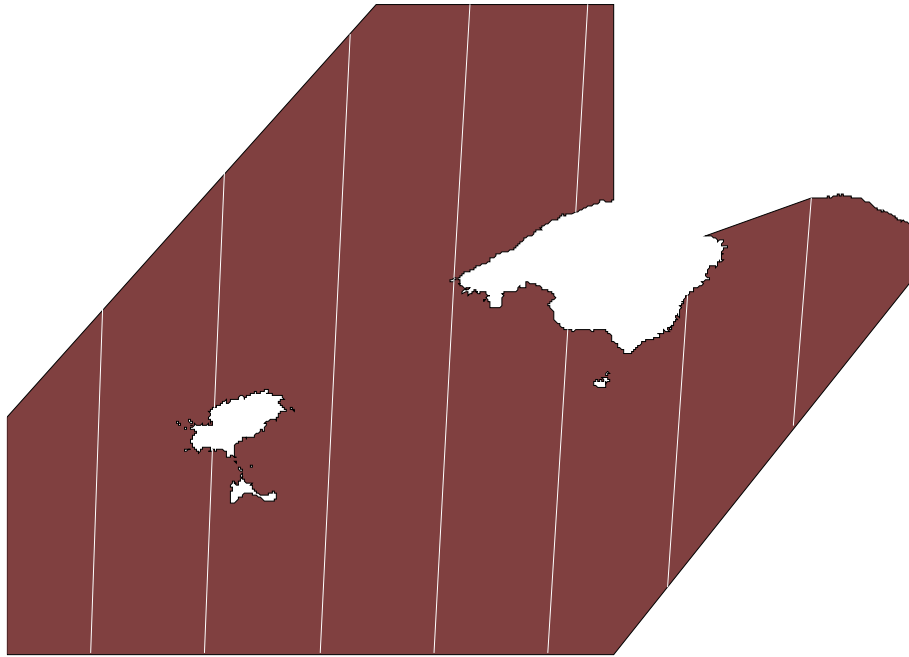
--

Sampler 8

4.20538 39.5188
4.230945 39.82466

--

IN-Replica 2



Sample layer name: Replica 2
Type of sampler: Line
Number of samplers: 7

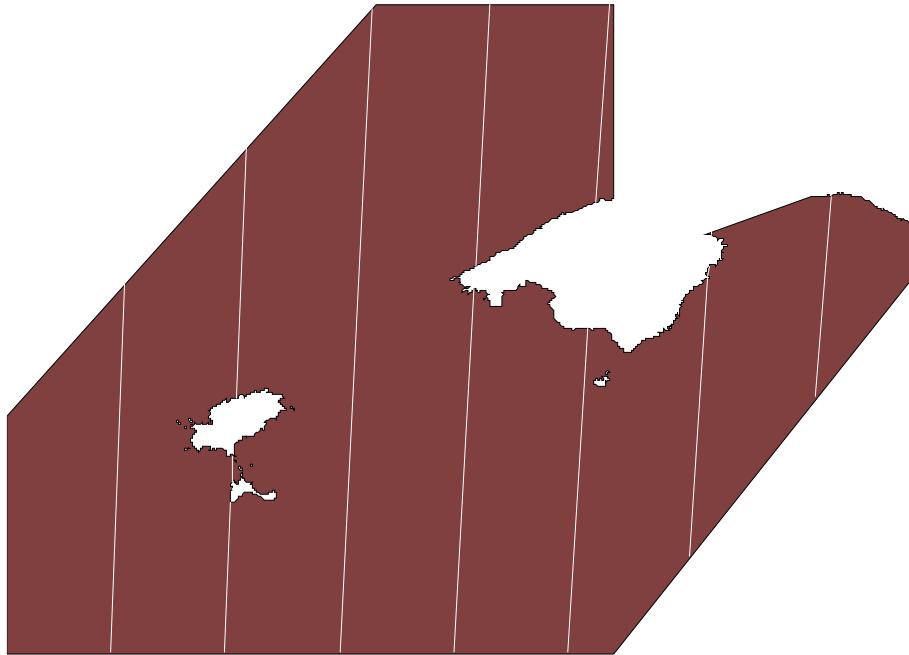
List of samplers:

	x-coord	y-coord
Sampler 1	0.7922808	38.00331
	0.8412835	39.45829
	--	--
Sampler 2	1.274717	38.00613
	1.309005	38.8628
	--	--
	1.316279	39.04103
	1.357818	40.03607
	--	--
Sampler 3	1.757122	38.00697
	1.883199	40.61131
	--	--
Sampler 4	2.239446	38.00583
	2.324733	39.57843
	--	--
	2.325262	39.58787
	2.391311	40.73853
	--	--
Sampler 5	2.721644	38.0027
	2.804898	39.37204
	--	--
	2.835907	39.86251
	2.892899	40.73792
	--	--

Sampler 6
3.222773 38.28687
3.306228 39.51025
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Sampler 7
3.757229 38.96366
3.831179 39.92511
--

IN-Replica 3



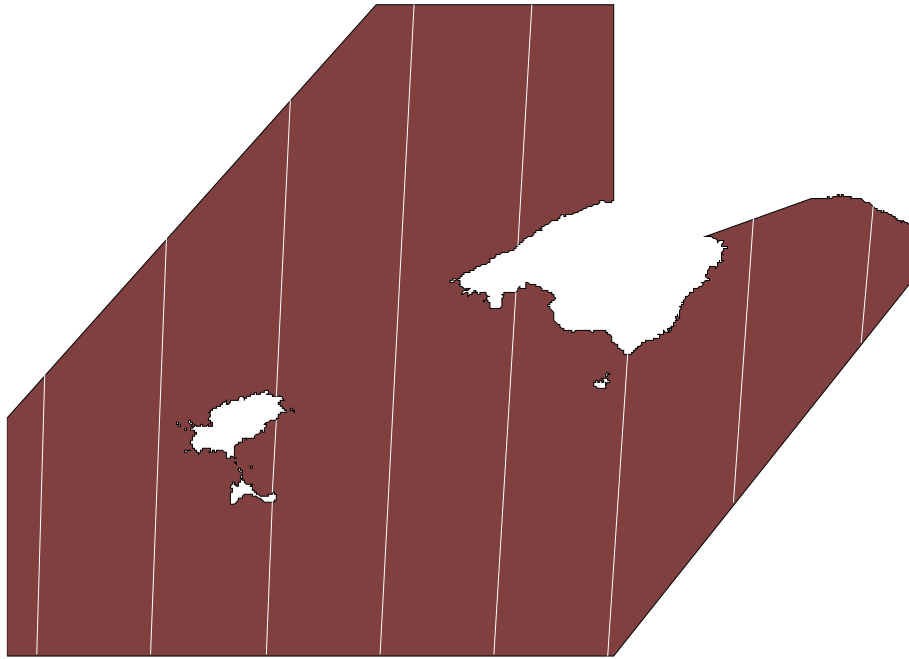
Sample layer name: Replica 3
Type of sampler: Line
Number of samplers: 7

List of samplers:

	x-coord	y-coord
Sampler 1		
	0.8773497	38.00396
	0.9317359	39.56035
	--	--
Sampler 2		
	1.359784	38.00642
	1.385616	38.63603
	--	--
	1.387722	38.68669
	1.388023	38.69394
	--	--
	1.389094	38.71967
	1.393867	38.83401
	--	--
	1.403894	39.07259
	1.449807	40.13769
	--	--
Sampler 3		
	1.842178	38.00691
	1.976782	40.71246
	--	--
Sampler 4		
	2.324483	38.00542
	2.409145	39.53399
	--	--
	2.414587	39.62902
	2.479765	40.73858
	--	--
Sampler 5		

```
2.806654 38.00195
2.89149 39.37038
--
2.925738 39.9011
2.98133 40.73758
--
Sampler 6
3.316265 38.40643
3.397959 39.57832
--
3.398578 39.58698
3.401831 39.63242
--
3.411213 39.76297
3.412319 39.77832
--
Sampler 7
3.852556 39.08268
3.918839 39.92843
--
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IN-Replica Extra



Sample layer name: Replica 4
Type of sampler: Line
Number of samplers: 8

List of samplers:

	x-coord	y-coord
Sampler 1		
	0.5650522	38.0013
	0.6009678	39.18531
	--	--
Sampler 2		
	1.047488	38.00505
	1.113444	39.76424
	--	--
Sampler 3		
	1.529913	38.00682
	1.557605	38.64508
	--	--
	1.559325	38.6842
	1.57278	38.98827
	--	--
	1.577543	39.09503
	1.634618	40.34069
	--	--
Sampler 4		
	2.012281	38.00661
	2.155023	40.73807
	--	--
Sampler 5		
	2.494545	38.00442
	2.582864	39.53265
	--	--
	2.594508	39.72706
	2.656663	40.73848
	--	--

Sampler 6
2.976656 38.00025
3.058035 39.26683
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Sampler 7
3.504205 38.64526
3.59145 39.84137
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Sampler 8
4.044209 39.32044
4.090824 39.89424
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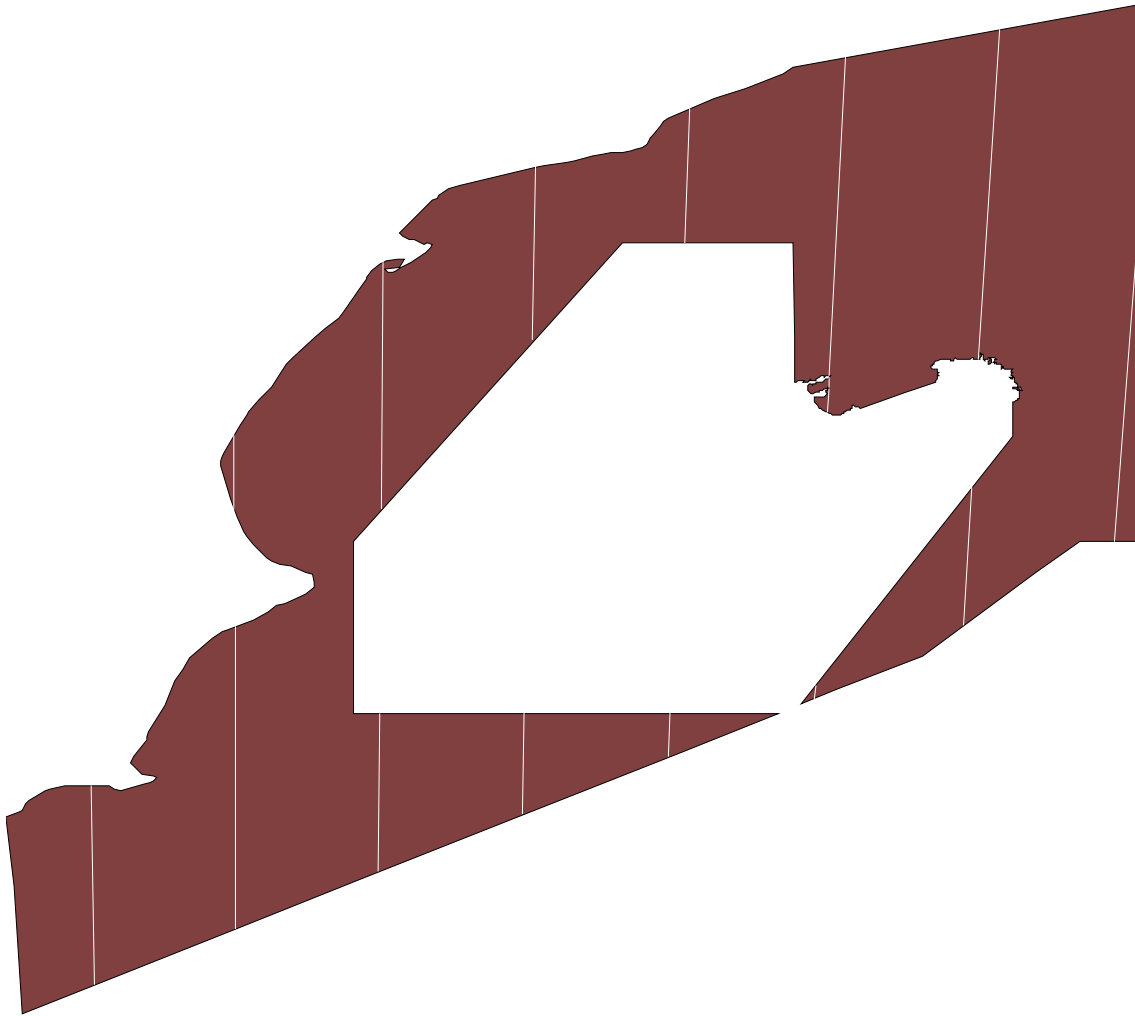
OUT-Replica 1

Survey Plan Results:

DESIGN CLASS: Systematic Random Sampling
SAMPLER CLASS: Line
SAMPLE LAYER: New Design 4
STRATUM LAYER: Study area
Effort definition by Spacing.
EFFORT UNITS: Kilometer
Deal with boundary regions by using Minus sampling.
COVERAGE PROBABILITY GRID: Assume even
GRID LAYER NAME: Coverage
COVERAGE PROBABILITY FIELD NAME: New Design

STRATUM LAYER COORDINATE SYSTEM: Geographic
DESIGN COORDINATE SYSTEM: Projected
DESIGN PROJECTION: Transverse Mercator
DESIGN UNITS: Kilometer
RNG SEED VALUE: 230242 (FROM SYSTEM CLOCK)

GLOBAL STRATUM:
APPROXIMATED LINE TOTAL: 9
LINES GENERATED: 8
SAMPLER WIDTH: 4 Kilometers
ESTIMATED ON EFFORT TRACKLINE LENGTH: 1884,396 Kilometers
REALIZED ON EFFORT TRACKLINE LENGTH: 1661,126 Kilometers
EXPECTED SAMPLER AREA COVERAGE: 13289,011 square Kilometers
LINE SPACING: 74 Kilometers
LINE ANGLE: 90 degrees
TOTAL TRACKLINE LENGTH: 3313,257 Kilometers
The total travel path starts at the beginning of the first sampler line.
TOTAL CYCLIC TRACKLINE LENGTH: 4065,431 Kilometers
REALIZED SAMPLER AREA COVERAGE: 12970,075 square Kilometers
STRATUM AREA: 123742,949 square Kilometers
PROPORTION OF STRATUM SAMPLED: 0,105



Number of samplers: 8

List of samplers:

	x-coord	y-coord
Sampler 1		
	-1,069571	36,42117
	-1,085906	37,57841
	--	--
Sampler 2		
	-0,2454817	36,74781
	-0,2513105	38,49938
	--	--
	-0,2537243	39,18236
	-0,2552949	39,61456
	--	--
Sampler 3		
	0,5856577	37,07804
	0,5929258	38,00151
	--	--
	0,6027617	39,18736
	0,6155017	40,62578
	--	--
Sampler 4		
	1,42407	37,41066

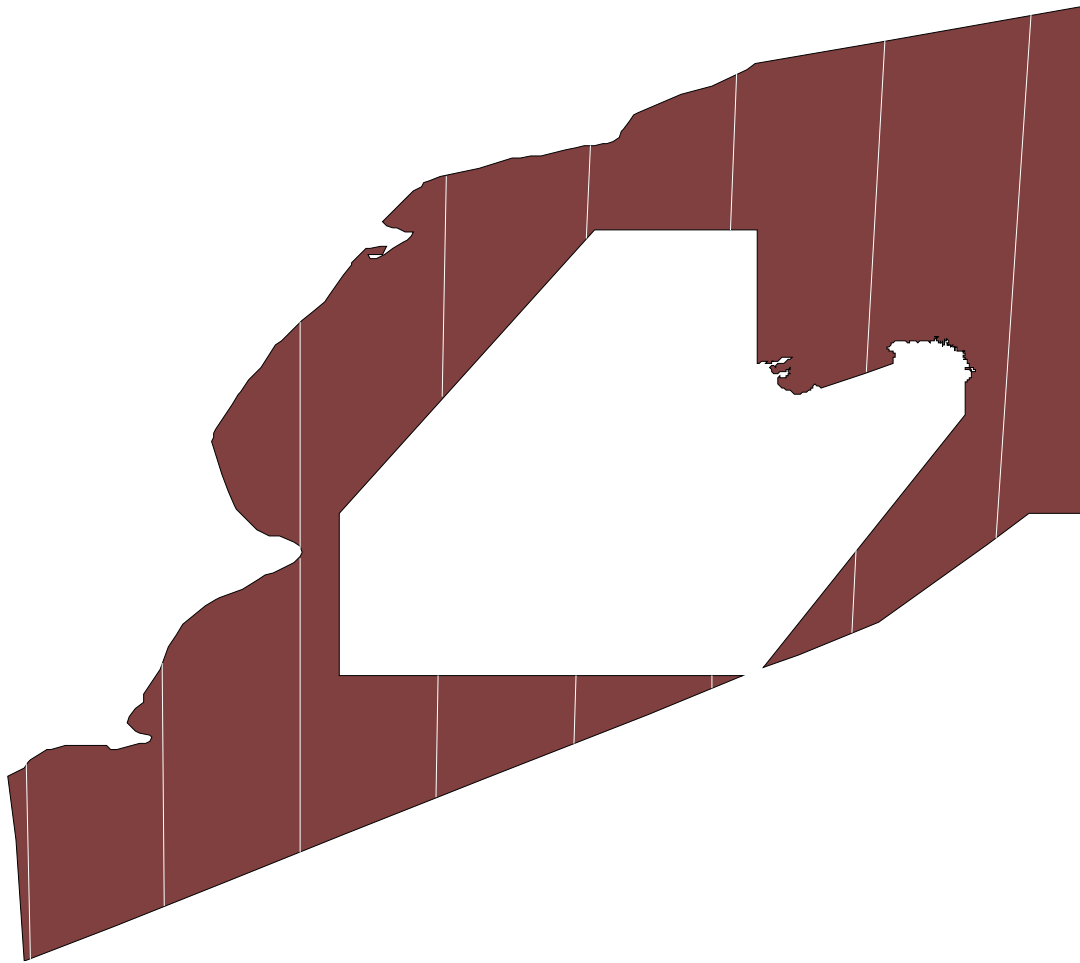

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1,435515 38,00625
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1,480093 40,17107
1,502565 41,17932
--
Sampler 5
2,269991 37,7462
2,277949 38,00495
--
2,368607 40,73851
2,396632 41,51283
--
Sampler 6
3,123673 38,08457
3,127001 38,16256
--
3,197763 39,7529
3,204082 39,88895
--
3,204191 39,89128
3,206924 39,94983
--
3,207525 39,96268
3,298237 41,81295
--
Sampler 7
3,989966 38,50878
4,035085 39,3089
--
4,079067 40,05918
4,199071 41,97285
--
Sampler 8
4,871173 39,00024
4,998144 40,7669
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OUT-Replica Extra

DESIGN CLASS: Systematic Random Sampling
SAMPLER CLASS: Line
SAMPLE LAYER: New Design 5
STRATUM LAYER: Study area
Effort definition by Spacing.
EFFORT UNITS: Kilometer
Deal with boundary regions by using Minus sampling.
COVERAGE PROBABILITY GRID: Assume even
GRID LAYER NAME: Coverage
COVERAGE PROBABILITY FIELD NAME: New Design

STRATUM LAYER COORDINATE SYSTEM: Geographic
DESIGN COORDINATE SYSTEM: Projected
DESIGN PROJECTION: Transverse Mercator
DESIGN UNITS: Kilometer
RNG SEED VALUE: 230529 (FROM SYSTEM CLOCK)

GLOBAL STRATUM:
APPROXIMATED LINE TOTAL: 9
LINES GENERATED: 8
SAMPLER WIDTH: 4 Kilometers
ESTIMATED ON EFFORT TRACKLINE LENGTH: 1884,396 Kilometers
REALIZED ON EFFORT TRACKLINE LENGTH: 1749,334 Kilometers
EXPECTED SAMPLER AREA COVERAGE: 13994,671 square Kilometers
LINE SPACING: 74 Kilometers
LINE ANGLE: 90 degrees
TOTAL TRACKLINE LENGTH: 3311,814 Kilometers
The total travel path starts at the beginning of the first sampler line.
TOTAL CYCLIC TRACKLINE LENGTH: 3908,053 Kilometers
REALIZED SAMPLER AREA COVERAGE: 13812,74 square Kilometers
STRATUM AREA: 123742,949 square Kilometers
PROPORTION OF STRATUM SAMPLED: 0,112



Number of samplers: 8

List of samplers:

	x-coord	y-coord
Sampler 1		
	-1,449871	36,27007
	-1,472579	37,46222
	--	--
Sampler 2		
	-0,6289951	36,59637
	-0,6415274	38,08414
	--	--
Sampler 3		
	0,1988482	36,92485
	0,2037507	38,72942
	--	--
	0,20392	38,78895
	0,2080208	40,17905
	--	--
Sampler 4		
	1,033863	37,25645
	1,044283	38,0048
	--	--
	1,069607	39,71519
	1,091342	41,07477
	--	--
Sampler 5		
	1,876287	37,59118
	1,886821	38,00631
	--	--
	1,960586	40,69498

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1,977402 41,26028
--
Sampler 6
2,726313 37,92732
2,729069 38,00177
--
2,837813 40,73809
2,879511 41,69503
--
Sampler 7
3,584286 38,26762
3,609708 38,7777
--
3,66628 39,86824
3,78006 41,8956
--
Sampler 8
4,465581 38,85363
4,683584 42,06021
--
```