

ArcGIS Platform Implementation at the Caribbean Fisheries Management Council

January – June 2017

Task 3: ArcGIS Online Commercial Landings and Census Data Web Maps - Puerto Rico

Task 5: Technical Support

September 28th, 2018

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1. Introduction

The following document summarizes Task 3: ArcGIS Online Commercial Landings and Census Data Web Maps and Task 5: Technical Support of the CFMC GIS Project: **Development of GIS access to coral and mesophotic reef data from Puerto Rico and the USVI, including commercial landings data**. These tasks were performed between August – October 2016, December 2016 and January – June 2017 and final web maps and web apps quality control in September 2018.

Specific tasks include:

Task 3: ArcGIS Online Commercial Landings and Census Data Web Maps.

- Task 3.1 Design and create feature class for Fisheries
- Task 3.2 Load fisheries feature class to CFMC geodatabase
- Task 3.4 Prepare Landings Register Data.
- Task 3.5 Configure ArcGIS Online Web Maps

Task 5: Technical Support – (45 hrs)

- Configure Puerto Rico Commercial Landings Statistics Web Apps
- Configure Puerto Rico Commercial Landings Statistics Story Maps

2. Task 3: ArcGIS Online Commercial Landings and Census Data Web Maps.

Task 3.1 Design and create feature class for Fisheries

• The creation and design of the Commercial Fish Landings fish villages was based on the *Historic Fishing Centers Map of Puerto Rico* and the shapefiles of those fishing centers that CFMC delivered.



Historic Fishing Centers Map of Puerto Rico

- The location of the fish villages between 1983 and 2014 was validated throughout a series of workshops with CFMC personnel between August and October 2016.
- The final product consists of a fish village feature class per year. Each fish village was identified as active or inactive for the corresponding year. Additional attributes include:
 - o Fish Village ID
 - o Name
 - o Municipio
 - o Región
 - Status (Active or Inactive)

Task 3.2 Load fisheries feature class to CFMC geodatabase

- A fish village feature class per year was loaded into the CFMC geodatabase.
- Two additional feature classes were created:
 - Municipios with fishing villages
 - Regiones depicting fishing regions.



CFMC File Geodatabase and Feature Classes



Vector Map of the Coastal Municipalities of Puerto Rico



Vector Map of the Coastal Fishing Regions of Puerto Rico



Vector Map of the Fishing Villas of Puerto Rico

Task 3.4 Prepare Landings Register Data.

- The preparation, quality control and depuration process of the Puerto Rico commercial fish landings data, including the building of several geoprocessing models to process the data and the development of python scripts was carried out between October – December 2016 and January – June 2017.
- Quality Control and depuration of PRLAN tables and Municipality Reports.
 - The first step consisted in the depuration process of all raw data received by CFMC. The documents consisted of Excel tables that contain the attributes of all fished species in Puerto Rico (PR). The CFMC Staff made a quality control of the information before being delivered to GMT.

PRLAN01	10/10/2016 3:59 PM	Microsoft Excel W	6,283 KB
PRLAN02S	10/10/2016 4:00 PM	Microsoft Excel W	6,163 KB
PRLAN03	10/10/2016 4:02 PM	Microsoft Excel W	6,784 KB
PRLAN04	10/10/2016 4:03 PM	Microsoft Excel W	5,163 KB
PRLAN05A	10/10/2016 4:04 PM	Microsoft Excel W	4,342 KB
PRLAN06A	10/10/2016 4:06 PM	Microsoft Excel W	3,594 KB
PRLAN07	10/10/2016 4:07 PM	Microsoft Excel W	3,391 KB
PRLAN08	10/10/2016 4:08 PM	Microsoft Excel W	3,252 KB
PRLAN10	10/10/2016 4:09 PM	Microsoft Excel W	3,034 KB
PRLAN88	10/10/2016 3:30 PM	Microsoft Excel W	2,602 KB
PRLAN89	10/10/2016 3:32 PM	Microsoft Excel W	2,959 KB
PRLAN90	10/10/2016 3:33 PM	Microsoft Excel W	2,944 KB
PRLAN91	10/10/2016 3:35 PM	Microsoft Excel W	3,696 KB
PRLAN92	10/10/2016 3:36 PM	Microsoft Excel W	3,081 KB
PRLAN93	10/10/2016 3:38 PM	Microsoft Excel W	3,368 KB
PRLAN94	11/1/2016 2:00 PM	Microsoft Excel W	3,806 KB
PRLAN95	10/10/2016 3:42 PM	Microsoft Excel W	5,923 KB
PRLAN96	10/10/2016 3:43 PM	Microsoft Excel W	10,997 KB
PRLAN97	10/10/2016 3:45 PM	Microsoft Excel W	6,245 KB
PRLAN98	10/10/2016 3:50 PM	Microsoft Excel W	5,237 KB
PRLAN99	10/10/2016 3:52 PM	Microsoft Excel W	5,418 KB
PRLAN2000	10/10/2016 3:56 PM	Microsoft Excel W	5,906 KB
PRLAN2011	10/10/2016 4:11 PM	Microsoft Excel W	3,496 KB

All the Excel tables delivered by CFMC were imported into a File Geodatabase.
 GMT perfomed additional quality control and depuration processes of the PRLAN Tables imported. The image underneath is an excerpt of the GDB containing the standalone tables tables imported to the geodatabase.



 All The images underneath showns the schema desing and description of the raw tables. The fields that are highlighted in the image, were the fields that were used to make all the analysis.

ble Pro	perties					>
ieneral	Editor Tracking	Fields	Indexes	Subtypes	Relationships	
		Field Ner			Data Type	
	CTID	rieid Nar	ne		Object ID	
					Date	_
CENT					Taxt	_
	ODE				Text	_
GEA					Text	_
					Long Integer	_
ISP (Text	
TOT	WT				Double	_
PRIC	F				Double	_
MON					Text	_
DAY					Text	_
YEA	R				Text	_
Valu	e				Double	_
Field F	Properties			RIECTID		
					Īmpo	rt
To add the Dat	a new field, type a Type column to	the name choose t	e into an e the data ty	mpty row in /pe, then ed	the Field Name column, di lit the Field Properties.	dk in
					OK Cancel	Apply

Field Name	Description
DATE	Date of the Reported Catch
CENTER	Unique ID or code of the Fishing Villa
ID_CODE	N/A
GEAR_CODE	Unique ID or code of the type of gear used to make the catch
NO_TRIPS	Number of trips made
SP CODE	Unique ID or code of the species
TOT_WT	Amount of the weight reported of the catch
PRICE	Price per Pound of that Year
MON	Month of the reported catch
DAY	Day of the reported catch
YEAR	Year of the reported catch
Value	N/A

- Municipalities Commercial Landings Annual Reports
 - GMT revised the annual reports that contained commercial fish landings statistics for coastal municipalities categorized by Total Pounds (TP), Average Price per Pound (Avg PP) and Total Value (TV). A table containing all the information of the municipalities was created to assign those values to the Municipalities feature class.



Ta	ble											
(* : * :	월 - (월 -) 월 월 @ 분 ×											
м	unStats											
	Nombre	Region	ID_Municipio	County	Year	Pounds	Value	Average Price	Metadata			
•	Isabela	Region Norte	1	071	1983	10660	20303	1.85	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Quebradillas	Region Norte	2	115	1983	46	82	1.68	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Camuy	Region Norte	3	027	1983	11499	21490	1.87	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Hatillo	Region Norte	4	065	1983	19063	26232	1.52	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Arecibo	Region Norte	5	013	1983	25468	30795	1.27	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Barceloneta	Region Norte	6	017	1983	41002	43891	1.27	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Manati	Region Norte	7	091	1983	1742	3963	2.52	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Vega Baja	Region Norte	8	145	1983	21448	37268	2.11	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Vega Alta	Region Norte	9	143	1983	8084	15546	2.18	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Dorado	Region Norte	10	051	1983	15246	28486	2.12	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Toa Baja	Region Norte	11	137	1983	2681	3583	1.29	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Catano	Region Norte	12	033	1983	51644	44836	0.97	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	San Juan	Region Norte	13	127	1983	91807	162287	1.75	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Carolina	Region Norte	14	031	1983	5148	9049	2.08	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Loiza	Region Norte	15	087	1983	58307	64795	1.34	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Rio Grande	Region Norte	16	119	1983	18455	32126	2	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Luquillo	Region Norte	17	089	1983	34268	54149	1.85	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Fajardo	Region Este	18	053	1983	96019	125311	1.33	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Ceiba	Region Este	19	037	1983	36831	44164	1.14	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Naguabo	Region Este	20	103	1983	77177	95347	1.4	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Humacao	Region Este	21	069	1983	75706	88170	1.27	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Yabucoa	Region Este	22	151	1983	52603	71789	1.62	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Maunabo	Region Este	23	095	1983	31352	28501	1.1	Matos Caraballo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			
	Culebra	Region Este	24	049	1983	22831	30185	1 10	Matos Carahallo and Rivera Alvarez 1994 Overview PR Small-Scale Fish Stats 1983-87			

- Geoprocessing models and Scripts
 - GMT performed an analytical process to obtain the statistical results of total weight for species per month, and for year of all the fishing villas. To execute this task, GMT, Corp designed and created a geoprocessing model on ArcGIS for Desktop. This model helped automatize the statisical analysis for all years and generate the different feature classes with the corresponding values.

The image below shows the model created in ArcCatalog using ModelBuilder, a programming module for geoprocessing workflows. This model automates the total weight of fished species per month.



The image below shows the model created in ArcCatalog using ModelBuilder, a programming module for geoprocessing workflows. This model automates the total weight of fished species per year.



The image below shows the feature classes (outputs) generated by the models that automated the total weight of fished species per month and per years.

CFMC Results per Month.gdb
PRLAN83_WT_SP_M_Pivot
PRLAN83_WT_SP_M_SumStat
PRLAN83_WT_SP_Month
PRLAN84_WT_SP_M_Pivot
PRLAN84_WT_SP_M_SumStat
PRLAN84_WT_SP_Month
PRLAN85_WT_SP_M_Pivot
PRLAN85_WT_SP_M_SumStat
PRLAN85_WT_SP_Month
PRLAN86_WT_SP_M_Pivot
PRLAN86_WT_SP_M_SumStat
PRLAN86_WT_SP_Month
PRLAN87_WT_SP_M_Pivot
PRLAN87_WT_SP_M_SumStat
PRLAN87_WT_SP_Month

CFMC_Results_per_Year.gdb
PRLAN83_WT_SP
PRLAN83_WT_SP_Pivot
PRLAN83_WT_SP_SumStat
PRLAN84_WT_SP
PRLAN84_WT_SP_Pivot
PRLAN84_WT_SP_SumStat
PRLAN85_WT_SP
PRLAN85_WT_SP_Pivot
PRLAN85_WT_SP_SumStat
PRLAN86_WT_SP
PRLAN86_WT_SP_Pivot
PRLAN86_WT_SP_SumStat
PRLAN87_WT_SP
PRLAN87_WT_SP_Pivot
PRLAN87_WT_SP_SumStat

T

 An additional script was created to compute species that represent 80% or more of the total landings per villa per year. This script was programmed to automate the process of identifying the significant percentage of species per fishing villas for a particular year. The analyst or end user can enter the percentage number of his/her preference as a parameter for the script.

ile Edit Format	Run Options Window Help
Name	PorcentajeFanecie.nv
Purposet	Torochow (chop-corcip)
Author:	GMT
1	
Created:	26/10/2016
Copyright:	(c) GMT 2016
Licence:	<your licence=""></your>
mport arcpy	
mport cav	
mport os	
mport re	
com decimal i	mport Decimal
definit self.i self.n self.y self.y	<pre>(self, id, weight): id = id same = "" reight = weight percent = 0</pre>
Represents th	te names of a specie including its common, english and scientific
names with it	a corresponding species id.
Lass SpeciesN	name:
nel init	<pre>_ (star, row, nome, engrashwame, screntarrowame); id = id</pre>
self.n	name a name
self.e	englishName = englishName
self.s	cientificName = scientificName
Represents a	list of all the species name with its corresponding species id
extracted fro	m a CSV file.
The second se	WameList:
lass SpeciesN	
definit	<pre>(self, speciesNameCSVFile):</pre>
definit self.l	<pre>c(self, speciesNameCSVFile): stAllSpeciesName = []</pre>
definit self.l	<pre>(self, speciesNameCSVFile): stAllSpeciesName = []</pre>

The image below shows an example of which species represent 80% of the fish landings reported for 1983 by fishing villa. The result of the script is an output table that has the name of each species in Spanish, English and official scientific name. The output table also has the statistics of the total weight per species and the sum of all weights per species and per fishing villa. This result was subsequently published in a web application.



Porcentaje de Especies			2	<
Archivo GDB				~
$\label{eq:c:proyectos_2017} C:\end{tabular} C:\end{tabular} Proyectos_2017\@CFMC\@SCript_80\%\rvelez\CFMC\CFMC_rvelez.gdb$			2	
Porcentaje (Ej. 80)				
			80	
Guardar CSV en:			_	
C:\Proyectos GMT\Proyectos_2017\@CFMC\@SCript_80%\rvelez\CFMC			2	
				,
OK Cancel Environments	Sł	now He	lp >>	



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1	Porcentaje de Entra	adac	80.00%									
2	Municipio	Nomi	bre Villa	ID Villa	ID Especie	Nombre Especie	Nombre Ingles	Nombre Científico	Peso	Porcentaje	Total Porcentaje	Total Peso
3	Aguada	Espinar		410 22	5_1983	Atunes	Mackerels and Tur	Scombridae	22892	44.6	\$4.4	43317
4	Aguada	Espinar		410 13	9_1983	Chillo	Silk snapper	Lutjanus vivanus	10370	20.2	\$4.4	43317
5	Aguada	Espinar		410 20	2_1983	Picuas	Barracudas	Sphyraenidae	4248	8.3	84.4	43317
6	Aguada	Espinar		410 10	9_1983	Jureles	Jacks	Carangidae	3330	6.5	84.4	43317
7	Aguada	Espinar		410 23	3_1983	Carite	King mackerel, Kir	Scomberomorus cavalla	2477	4.8	84.4	43317
8	Aguada	Guanig	uilla	411 10	9_1983	Jureles	Jacks	Carangidae	2686	56.9	99.6	4706
9	Aguada	Guaniq	uilla	411 22	5_1983	Atunes	Mackerels and Tur	Scombridae	1080	22.9	99.6	4706
10	Aguada	Guaniq	uilla	411 75	5_1983	Otros Peces	Other fishes	N/A	940	19.9	99.6	4706
11	Aguadilla	Higuey		420 22	5_1983	Atunes	Mackerels and Tur	Scombridae	10609	38.3	84.1	23264
12	Aguadilla	Higuey		420 23	3_1983	Carite	King mackerel, Kin	Scomberomorus cavalla	5438	19.6	84.1	23264
13	Aguadilla	Higuey		420 13	9_1983	Chillo	Silk snapper	Lutjanus vivanus	3644	13.2	84.1	23264

 To manage all the csv tables produced by the python script that computes species that constitute 80% of total landings a geoprocessing model on ArcGIS for Desktop was created. This model imports all the csv tables to a standalone table in a file geodatabase through a batch import process.



The image below shows an example of the result of the batch importation process of the .csv tables to a file geodatabase standalone tables through the geoprocessing model.



 A geoprocessing model was created to extract the total percentage per fishing villa of the 80% of the species catch standalone tables. This result will be appended to the fishing villas feature classes for mapping purposes.



The image below shows an example of the result of the batch extraction process of the 80% total percentage value per fishing villa for all the file geodatabase standalone tables.

	 Extraer_Porcentaje_x_Zona.gdb PRLAN_1990_WT_SP_80_Percentage PRLAN_1991_WT_SP_80_Percentage 								
PF	PRLAN_1990_WT_SP_80_Percentage								
Г	OBJECTID *	CENTER	Total Landing Percentage						
	1	000	0						
	2	010	84.						
	3	020	0						
	4	030	90.6						
	5	040	0						

 A geoprocessing model was created to calculate an assign to each fishing villa the total Pounds (TP), Average Price per Pound (Avg PP) and the Total Value (TV). This result was appended to the fishing villas feature classes for mapping purposes.



The image below shows an example of the result of the batch calculation process of the total Pounds (TP), Average Price per Pound (Avg PP) and the Total Value (TV) per fishing villa for all the Landings Reported file geodatabase standalone tables.



 Another model was created to automate the process of generating tables for each year per fishing villas with the statistics of Total Weight per Gear Code. The results were appended to the fishing villas feature classes and used for the representation and cartographic purposes.



The image below shows an example of the result of the calculation process of the Total Weight reported by Gear Code

	GEAR_CODES.gdb GearCodes_1983								
ſ	CENTER *	GCODES_ShortInteger100	GCODES_ShortInteger101	GCODES_ShortInteger102					
ľ	▶ 010	0	907	367					
[020	0	0	0					
l	030	50	35	35					
l	040	0	0	0					
l	041	600	15	0					
l	050	803	4608	134					
l	051	2449	0	0					
ļ	060	10343	94	0					
ļ	061	2550	3401	0					
ļ	070	0	162	0					
	080	0	0	0					

 A Python Script was programmed to automate the assignment of the gear code name, based on the gear code, as an alias to all fields. The objective is to assign to the fish villas feature class the total weight (lbs) per gear code statistics.

```
alteralias_FC_GEAR_Codes.py
🛃 *alteralias_FC_GEAR_Codes.py - C\GMT\Alberto\USVI\Analisis\GearCode_Analisis\Aliases_GearCode\alteralias_FC_GEAR_C... 🗕 🗌
File Edit Format Run Options Window Help
#-----
             module1
# Name:
# Purpose:
# Author:
             GMT, Corp
# Created: 24/10/2016
# Copyright: (c) GMT,Corp 2018
# Licence:
# Licence: <your licence>
#---
import arcpy, os, csv
#gets the python file directory as a starting directory.
wrkSpace = os.getcwd()
#should use two backslashes in file path
arcpy.env.workspace = r"C:\GMT\Alberto\USVI\Analisis\GearCode Analisis\Aliases
# Diccionarios uno para mes y otro para especie
with open(wrkSpace+'\GearCode.csv', mode='r') as infile:
    reader = csv.reader(infile)
    with open(wrkSpace+'\CFMC_Species_short_new.txt', mode='w') as outfile:
        writer = csv.writer(outfile)
        species = {rows[0]:rows[1] for rows in reader}
fcs = arcpy.ListFeatureClasses()
for fc in fcs:
   print fc
    fieldList = arcpy.ListFields(fc, '*GCODES*', 'Double')
    for fieldFC in fieldList:
        try:
```

The image below shows an example of the result of the assignment of the gear code aliases to the fields through the python script.

Field Name Data Type CENTER_1 Text GCODES_ShortInteger100 Double GCODES_ShortInteger102 Double GCODES_ShortInteger103 Double GCODES_ShortInteger104 Double GCODES_ShortInteger105 Double GCODES_ShortInteger106 Double GCODES_ShortInteger107 Double GCODES_ShortInteger108 Double	Domain, Resolution and Tolera Relationships Representat Data Type ext ouble O	Field Name Data Type Field Name Data Type CENTER_1 Text GCODES_ShortInteger101 Double GCODES_ShortInteger102 Double GCODES_ShortInteger103 Double GCODES_ShortInteger104 Double GCODES_ShortInteger105 Double GCODES_ShortInteger107 Double GCODES_ShortInteger108 Double GCODES_ShortInteger109 Double GCODES_ShortInteger104 Double GCODES_ShortInteger105 Double GCODES_ShortInteger106 Double GCODES_ShortInteger107 Double GCODES_ShortInteger108 Double GCODES_ShortInteger109 Double GCODES_ShortInteger110 Double GCODES_ShortInteger111 Double GCODES_ShortInteger111 Double	Editor Tracking XY Coordinate System Domain, Resolution and Tolera Indexes Subtypes Feature Extent Relationships Representat Indexes Subtypes Text Indexes Indexes Indexes CENTER_1 Text Indexes Indexes <t< th=""><th>Eneral Editor Tracking XY Coordinate System Domain, Resolution and Toler indexes Subtypes Feature Extent Relationships Represent Indexes Subtypes Feature Extent Relationships Represent Image: CENTER_1 Text Text GCODES_ShortInteger100 Double Image: GCODES_ShortInteger101 Image: Center System Double Image: Center System Image: GCODES_ShortInteger102 Double Double Image: Center System Image: GCODES_ShortInteger103 Double Double Image: Center System Image: GCODES_ShortInteger103 Double Image: Center System Image: Center System Image: GCODES_ShortInteger103 Double Image: Center System Image: Center System Image: GCODES_ShortInteger104 Double Image: Center System Image: Center System Image: GCODES_ShortInteger106 Double Image: Center System Image: Center System Image: Center System Image: GCODES_ShortInteger110 Double Image: Center System Image: Center System Image: Center System Image: GCODES_ShortInteger111 Double Image: Center System Image: Center System Image: Center System Image: GCODES_ShortInteger111 Double Image: Center System</th><th>Editor Tracking XY Coordinate System Domain, Resolution and Tolera elds Indexes Subtypes Feature Extent Relationships Representa Field Name Data Type CENTER_1 Text GCODES_ShortInteger100 Double GCODES_ShortInteger101 Double GCODES_ShortInteger102 Double GCODES_ShortInteger103 Double GCODES_ShortInteger104 Double GCODES_ShortInteger105 Double GCODES_ShortInteger107 Double GCODES_ShortInteger107 Double GCODES_ShortInteger107 Double GCODES_ShortInteger107 Double GCODES_ShortInteger107 Double GCODES_ShortInteger107 Double GCODES_ShortInteger110 Double GCODES_ShortInteger111 Double <th></th><th></th><th></th><th></th><th></th><th></th></th></t<>	Eneral Editor Tracking XY Coordinate System Domain, Resolution and Toler indexes Subtypes Feature Extent Relationships Represent Indexes Subtypes Feature Extent Relationships Represent Image: CENTER_1 Text Text GCODES_ShortInteger100 Double Image: GCODES_ShortInteger101 Image: Center System Double Image: Center System Image: GCODES_ShortInteger102 Double Double Image: Center System Image: GCODES_ShortInteger103 Double Double Image: Center System Image: GCODES_ShortInteger103 Double Image: Center System Image: Center System Image: GCODES_ShortInteger103 Double Image: Center System Image: Center System Image: GCODES_ShortInteger104 Double Image: Center System Image: Center System Image: GCODES_ShortInteger106 Double Image: Center System Image: Center System Image: Center System Image: GCODES_ShortInteger110 Double Image: Center System Image: Center System Image: Center System Image: GCODES_ShortInteger111 Double Image: Center System Image: Center System Image: Center System Image: GCODES_ShortInteger111 Double Image: Center System	Editor Tracking XY Coordinate System Domain, Resolution and Tolera elds Indexes Subtypes Feature Extent Relationships Representa Field Name Data Type CENTER_1 Text GCODES_ShortInteger100 Double GCODES_ShortInteger101 Double GCODES_ShortInteger102 Double GCODES_ShortInteger103 Double GCODES_ShortInteger104 Double GCODES_ShortInteger105 Double GCODES_ShortInteger107 Double GCODES_ShortInteger107 Double GCODES_ShortInteger107 Double GCODES_ShortInteger107 Double GCODES_ShortInteger107 Double GCODES_ShortInteger107 Double GCODES_ShortInteger110 Double GCODES_ShortInteger111 Double <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>						
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lick any field to see its properties. Field Properties		ield Properties		Alias Nasa Allow NULL values Yes Default Value	Alias Nasa Aliow NULL values Yes Default Value	ck any fiel Field Prope	d to see its properties. erties				
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		Allas Nasa Allow NULL values Yes Default Value	Default Value								
		Allas Nasa Allow NULL values Yes Default Value	Default Value								

- Final Products:
 - Commercial Landings for Puerto Rico was organized in three different file geodatabases: (1) per Villa, (3) per Municipio, and (3) per Region. This schema is reproduced for each decade between 1983 – 2014.

D D D D D D D D D D D D D D D D D D D		
	E Deacada_Municipio.gdb	🖃 🛄 Deacadas_Region.gdb
PRLAN83_W1_80_SP	CFMC_MuniFishStats_1983	🖾 Region_1983
PRLAN84_W1_80_SP	CFMC_MuniFishStats_1984	Region 1984
PRLAN85_WT_80_SP	CFMC_MuniFishStats_1985	Region 1985
PRLAN86_WT_80_SP	CFMC_MuniFishStats_1986	Region 1986
PRLAN87_WT_80_SP	CFMC_MuniFishStats_1987	Region_1900
PRLAN88_WT_80_SP	CFMC_MuniFishStats_1988	B Region_1987
PRLAN89_WT_80_SP	CFMC_MuniFishStats_1989	Region_1988
PRLAN90_WT_80_SP	CFMC_MuniFishStats_1990	Region_1989
Villa_Pesquera_1983	CFMC_MuniFishStats_1991	Region_1990
Villa Pesquera 1984	CFMC_MuniFishStats_1992	🖾 Region_1991
Villa Pesquera 1985	CFMC_MuniFishStats_1993	Region_1992
Villa Pesquera 1986	IMI CEMC MuniFichState 1994	
Villa Pesquera 1987		
Villa Pesquera 1988		
Villa Pesquera 1989		
Villa_Pesquera_1990		
Villas83To80Stats		
Villas84To80Stats		
Villas85To80Stats		
Villas86To80Stats		
Villas87To80Stats		
Villas88To80Stats		
Villas89To80Stats		
DA LOU DOT DOCH -		

 All this information was published to the CFMC ArcGIS Online Organizational site (<u>https://cfmc.maps.arcgis.com</u>) in order to build the web maps.

Task 3.5 Configure ArcGIS Online Web Maps

Web Maps

Each year of Reported Fish Landing Statistics has a web map configured. All these web maps were configured in the CFMC ArcGIS Online Organizational Account (<u>https://cfmc.maps.arcgis.com</u>).

• **1983-1989 Decade**

Title	
Desembarcos 1984	Web Map
Desembarcos 1983	Web Map
Desembarcos 1986	Web Map
Desembarcos 1985	Web Map
Desembarcos 1989	Web Map
Desembarcos 1988	Web Map
E Desembarcos 1987	Web Map

Web Maps for the 1983-1989 decade.

• **1990-1999 Decade**

Title	
E Desembarco 1997	Web Map
E Desembarcos 1996	Web Map
E Desembarco 1995	Web Map
Desembarcos 1994	Web Map
Desembarcos 1993	Web Map
E Desembarcos 1992	Web Map
Desembarcos 1991	Web Map
E Desembarcos 1990	Web Map
Desembarcos_1999	Web Map
E Desembarcos 1999	Web Map
E Desembarcos_1998	Web Map
📕 Desembarcos 1998	Web Map

Web Maps for the 1990-1999 decade.

• 2000-2009 Decade

Title	
Desembarcos 2009	Web Map
Desembarcos 2008	Web Map
Desembarcos 2007	Web Map
E Desembarco 2006	Web Map
E Desembarcos 2004	Web Map
E Desembarcos 2005	Web Map
E Desembarcos 2003	Web Map
E Desembarcos 2002	Web Map
E Desembarcos 2001	Web Map
E Desembarcos 2000	Web Map

Web Maps for the 2000-2009 decade.

• **2010-2014 Decade**

Title	
E Desembarcos 2010	Web Map
Desembarcos_2011	Web Map
Desembarcos_2012	Web Map
Desembarcos_2013	Web Map
Desembarcos_2014	Web Map

Web Maps for the 2010-2014 decade.

Each web map is composed of four main layers: (1) fishing village commercial landings statistics layer (2) coastal municipalities commercial landings reported statistics layer and (3) coastal regions statistics layer (4) Standalone table with the species that represent the 80% of the total weight of species reported for each fishing villa.



1983 Commercial Landings Reported Statistics Web Map

Example of web map configuration for the 1983-1989 decade

1990 Commercial Landings Reported Statistics Web Map



Example of web map configuration for the 1990-1999 decade

2001 Commercial Landings Reported Statistics Web Map



Example of web map configuration for the 2000-2009 decade

2010 Commercial Landings Reported Statistics Web Map



Example of web map configuration for the 2010-2014 decade

For each web map, the following elements were configured:

- Transparency
- Visibility Range
- Symbology
- Pop-Up (Villas, Municipios and Regiones feature layers)
- Pie Graph in Pop-Up representing Gear Codes (Villas feature layer



Villas Pop-Up Configuration



Villas Pie Graph Configuration



Municipios Pop-Up Configuration



Regiones Pop-Up Configuration

• Metadata, Credits and Tags were configured for each of the web maps and feature layers.

Desembarcos 1983 🖌 📾	
Overview Usage Settings	
East Thumbhal Web Map que muestra las estadísticas de desembarcos comerciales por Vila Pesquera, por / Edit	Open in Map Viewer
Municipio y por Region para el ano 1905 en Puerto Nico.	Open in ArcGIS Desktop
Created: Apr 27, 2017 Updated: Sep 28, 2018 View Count: 485	Create Presentation
* Add to Favorites	Create Web App 🗸
Description 🖌 tels	Share
Este web map muestra las estadísticas de total de libras, peso promedio por libra y valor total reportado de pesca para los desembarcos comerciales por VIIIa Pesquera, por Municipio y por Región para el año 1983 en Puero Rico. Los datos de estadísticas de pesca comercial los proveen los pescadores al Laboratorio de Invertigosiones Pesqueras del Departamento de Recursos Naturales y Ambientales de Pueno Rico o a la División de Pesca y Vida Silvestre del Departamento de Plantíficación y Recursos Naturales de las lala Virgenes Estadounidenses. Los datos se transferen o ficialmente a la NOAA- Southeast Fisheries Science Center (SEFSC). El CFMC obtuvo los datos del SEFSC para este proyecto. El Caribbean Fishery Management Council (CFMC) es uno de 8 consejos de pesca en los Estados Unidos, establecido bajo el PL 44265 (aprobado el 13 de abril de 1976), mejor conocido como el Magnucon-Stevens Act o el Sustainable Fisheries Act según	Item Information Lesm more Lew High Log Improvement: Add terms of use Details
enmendado en 1996 y 2007 para la conservación y utilización ordenada de los recursos pesqueros de los Estados Unidos de América	Size: 18 KB Shared with: Everyone (public), Caribbean
	Fishery Management Council
El LPNIC, se responsable de la creación de planes de manejo de recursos pesqueros en la 20na Exclusiva Economica de Londe (ESZ, por usa igías en inigiás) en preven Rico e Illas Vigenes Americanas A través de esta iniciariava el CRVD persigue incorporar los aistemas de información geográfica (GIS) para visualizar y mantar los patrones y tendencias de las activides pesqueras en Puerto Rico groveer acceso a información valoras as científicos, estudiantes, educadores y pacificas de general.	11 ¥ 3
	Owner 🛓 Change Owner
avers	€ cfmc_pr
Desembarcos por VIIa Fesquera 1983 Desembarcos por Municípios 1983 Desembarcos por Región 1983	Folder Move Decade_1983_1989 Categories / tdk This item has not been categorized.
Oceans	
World Ocean Base World Ocean Reference	Tags Zedic CFMC, Desembarcos, Landings, Puerto Rico, PR, 1983, Commercial Fish Landings, Fisheries,
Tables	Villas Pesqueras
Desembarcos por Especie 1983	Credits (Attribution) 🕜 Edit Caribbean Fisheries, Management Council
Terms of Use 🖉 Edit	(CFMC) NOAA- Southeast Fisheries Science Center (SEFSC) Laboratorio de Investigaciones Pesqueras del Departamento de Recursos
Add any special restrictions, disclaimers, terms and conditions, or limitations on using the item's content.	Naturales y Ambientales de Puerto Rico Web Map Creation: Angélica Robles - Intern Geographic Mapping Technologies, Corp.
Comments (0)	
Leave a comment.	

All feature layers are hosted on CFMC's ArcGIS Organizational Account organized under a folder named after the corresponding decade.

My Content My Favorites My Groups	My Organization Living Atlas	A la fait and the second		
🕂 Add Item 🗸 🛛 🖹 Create 🗸	Q Search Decade_1983_1989			
Folders 📔 New	1 - 16 of 33 in Decade_1983_1989		Sort	by: Date Modified 🗸
Q. Filter folders	Title			Modified •
	Desembarcos 1989	Web Map	· · · ·	Sep 29, 2018
📔 Analysis Decade PR Lobster	Desembarcos 1984	Web Mapping Application	• * …	Sep 29, 2018
🦀 Analysis Lobster STX	Desembarcos 1983	Web Mapping Application	G * ···	Sep 29, 2018
📔 Decada_1990_1999	Desembarcos 1985	Feature Laver (hosted)	· · · ·	Sep 28, 2018
Decada_2000_2009		Former (march)	a +	C 20, 2010
Decada_2010_2014	Desembarcos 1969	reature Layer (hosted)	G X	5ep 26, 2016
Decade_1983_1989	Desembarcos 1988	Feature Layer (hosted)	G * ···	Sep 28, 2018
Documentos PDFs Reportes	📄 🙎 Desembarcos 1987	Feature Layer (hosted)	G * ···	Sep 28, 2018
Mesofoticos	B December 1006	Facture Laws (hartest)	a +	Sep 29 2019

Commercial fish landings content for Puerto Rico (webmaps, web apps and feature layers) is shared within the Pesca Comercial (Commercial Fish Landings) Puerto Rico Group.



The Group has been set up as public for everyone to be able to view its contents.

Pesca Comercial (Commercial Fish Landings) Puerto Rico
Overview Content Members Settings
Group Settings
Delete Protection Prevent this group from being accidentally deleted. Delete Group
Who can view this group? O Chly group members O Reople in the organization (Caribbean Fishery Management Council) @ Everyone (public)
Who can join this group? I Those who request membership and are approved by a group manager Only those invited by a group manager Anyone
Who can contribute content to the group? @ Group members @ Only group owner and managers
Sort group content by Trole • Zeronding
Save

A second group for data download was created. This group is named Descarga de Datos Pesca Comercial en Puerto Rico



This group contains the fish landings data for download.

Overview Content Members Settings		1 Later	the second secon		
fine Content	Q Search group content				
✓ Group Categories	1 - 8 of 8				Sort by: Title 🗸 ↑
No Group Categories Yet	Title		Modified	Owner	View Count
Categories allow group members to	Desembarcos 1983	⊙ ★ …	Sep 28, 2018	cfmc_pr	71
simple way to browse content in the	Desembarcos 1984	·	Sep 28, 2018	cfmc_pr	446
group.	Desembarcos 1985	· ···	Sep 28, 2018	cfmc_pr	210
Set up group categories	Desembarcos 1986	· ···	Sep 28, 2018	cfmc_pr	146
✓ Item Type	Desembarcos 1987	G ★ …	Sep 28, 2018	cfmc_pr	182
Maps	Desembarcos 1988	G 🛧 …	Sep 28, 2018	cfmc_pr	171
Scenes	Desembarcos 1989	@ * ···	Sep 28, 2018	cfmc_pr	177
Apps Tools	Desembarcos_1983_1989	G ★ …	May 3, 2017	cfmc_pr	114

> Date Modified

3. Task 5: Technical Support

• Configure Puerto Rico Commercial Landings Statistics Web Apps

Web Maps configured in Task 3 were used as baseline to build web applications using ArcGIS Web App Builder.

Desembarcos 1983	Web Mapping Application
Desembarcos 1984	Web Mapping Application
Desembarcos 1985	Web Mapping Application
Desembarcos 1986	Web Mapping Application
Desembarcos 1987	Web Mapping Application
Desembarcos 1988	Web Mapping Application
Desembarcos 1989	Web Mapping Application

Each web application contains basic navigation tools and four configured widgets for visualizing map legend, selecting layers, changing base map and the related table widget that shows the 80% of the total weight (lbs) per species for each fishing villa.

Individual web applications were configured for each year between 1983 and 2014. Below is an example of the 2010 web application.


2010 Commercial Landings Reported Statistics Web App

• Metadata, Credits and Tags were configured for each of the web applications.

Desembarc	os 1984 🖌 Edit	
Overview Usage	Settings	
Edit Thumbneil	9 Aplicación web que muestra las estadísticas de desembarcos comerciales por Villa Pesquera, / Edit por Municipio y por Región para el año 1984 en Puerto Rico.	View Application
Antali	Web Mapping Application by cfmc_pr	Download
	Created: May 2, 2017 Updated: Sep 29, 2018 View Count: 175	
★ Add to Fevorites		Share
Description	🗡 Edit	Item Information 🛛 🛛 Learn more
Este aplicación web mu	uestra las estadísticas de total de libras, peso promedio por libra y valor total reportado de pesca para los	
pesca comercial los pro	veen los pescadores al Laboratorio de Investigaciones Pesqueras del Departamento de Recursos Naturales y	Low High
Ambientales de Puerto I Virgenes Estadounidens	Rico o a la División de Pesca y Vida Silvestre del Departamento de Planificación y Recursos Naturales de las Isla es. Los datos se transfieren oficialmente a la NOAA-Southeast Fisheries Science Center (SEFSC). El CFMC obtuvo	EL Top Improvement: Add terms of use
los datos del SEFSC para	a este proyecto.	Details
El Caribbean Fishery Ma (aprobado el 13 de abri 1996 y 2007 para la cons	nagement Council (CFMC) es uno de 8 consejos de pesca en los Estados Unidos, establecido bajo el PL 94-265 I de 1978), mejor conocido como el Magnuson-Stevens Acto el Sustainable Faheries Act según enmendado en senación y utilización ordenada de los recursos pesqueros de los Estados Unidos de América.	Size: 68 KB Shared with: Everyone (public), Pesca Comercial (Commercial Fish Landings) Puerto Rico, Caribbean Fishery Management Council
El CFMC es responsable sus siglas en inglés) en l	i de la creación de planes de manejo de recursos pesqueros en la Zona Exclusiva Económica del Caribe (EEZ, por Puerto Rico e Islas Virgenes Americanas. A través de esta iniciativa el CFMC persigue incorporar los sistemas de	API: JavaScript Purpose: Ready To Use
información geográfica acceso a información val	(GIS) para visualizar y analizar los patrones y tendencias de las actividades pesqueras en Puerto Rico y proveer iosa a científicos, estudiantes, educadores, pescadores y público en general.	
	· · · · · · · · · · · · · · · · · · ·	
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Terms of Use	🗸 Edit	😹 cfmc_pr
Add any special restriction	ons, disclatimers, terms and conditions, or limitations on using the item's content.	Folder Move Decade_1983_1989 Categories Zeite
Leave a comment.		This item has not been categorized.
Leave a com	iment.	Tags 🖌 Edit
	Comment	CFMC, Landings, Desembarcos, PR, Puerto Rico, 1984, Commercial Fish Landings, Fisheries, Villas Pesqueras
		Credits (Attribution) 💉 Edit
		Credits (Attribution)
		Credits (Attribution)

All web applications are hosted on CFMC's ArcGIS Organizational Account organized under a folder named after the corresponding decade.

My Content My Favorites My Groups	My Organization Living Atlas			
🕇 Add Item 🗸 🛛 🖹 Create 🗸	Q Search Decade_1983_1989			■ := ::
Folders 🔒 New	1 - 9 of 9 in Decade_1983_1989 Filters: Type: Apps × Clear	r All	Sort	by: Date Modified 🗸 🕔
Q, Filter folders	Title			Modified 💌
C Decede 2010 2014	Desembarcos 1984	Web Mapping Application	Ø ★ …	Sep 29, 2018
Decade 1983 1989	Desembarcos 1983	Web Mapping Application	₀ ★ ···	Sep 29, 2018
Documentos PDFs Reportes	Estadísticas de Pesca Década 1983-1989	Web Mapping Application	œ ★ …	Sep 28, 2018
Mesofoticos	Desembarcos 1989	Web Mapping Application	Ø ★ …	Sep 28, 2018
Mesophotics	Desembarcos 1988	Web Mapping Application	G ★ …	Sep 28, 2018
Puerto Rico	Desembarcos 1987	Web Mapping Application	⊛ ★ ···	Sep 28, 2018
	🔲 👿 Desembarcos 1986	Web Mapping Application	Ø ★ …	Sep 28, 2018
02AI_1A83_1A8A	Desembarcos 1985	Web Mapping Application	G ★ …	Sep 28, 2018

Commercial fish landings content for Puerto Rico (webmaps, web apps and feature layers) is shared within the Pesca Comercial (Commercial Fish Landings) Puerto Rico Group.

Р	Pesca Comercial (Commercial Fish Landings) Puerto Rico Owner: cfmc_pr	Å Delete Group
	Created: Sep 29, 2018 Last Updated: Sep 29, 2018 Viewable by: 🚱 Everyone (public)	

• Configure Puerto Rico Commercial Landings Statistics Story Maps

Story Maps combine authoritative maps with narrative text, images, and multimedia content. They are a medium for harnessing the power of maps and geography to tell a story.

As a culmination of the Puerto Rico Commercial Landings Statistics Project, a story map per decade was created to share with the public the data and analysis results of the historic commercial landings reported data between 1983 and 2014.

Title	
Estadísticas de Pesca Década 1983-1989	Web Mapping Application
Title	
Estadísticas de Pesca Década 1990 -1999	Web Mapping Application
Title	
Estadísticas de Pesca Década 2000 al 2009	Web Mapping Application
Title	
🔲 🔝 Estadísticas de Pesca Década 2010-2014	Web Mapping Application

The story maps index the configured web applications described in the "*Configure Puerto Rico Commercial Landings Statistics Web Apps*" section. The story map also incorporates text which summarized the most important facts for that year.

Through these story maps, the history of commercial fishing in Puerto Rico can be recreated, studied and analyzed. With the use of Web GIS this historical data, originally in table format, is brought to life in an interactive medium, bringing new insights to scientists, researchers, educators, fishermen and the general public.



1983 -1989 Commercial Landings Reported Statistics Story Map

1990-1999 Commercial Landings Reported Statistics Story Map





2000-2009 Commercial Landings Reported Statistics Story Map

2010-2014 Commercial Landings Reported Statistics Story Map





ArcGIS Platform Implementation at the Caribbean Fisheries Management Council

July – September 2018

Task 3: ArcGIS Online Commercial Landings and Census Data Web Maps - USVI

Task 5: Technical Support

September 28th, 2018

Prepared for: Graciela García Moliner FMP and Habitat Specialist Caribbean Fisheries and Management Council

Prepared by: Geographic Mapping Technologies, Corp. 54 Calle Mayagüez San Juan, Puerto Rico 00917 Teléfonos: 787-250-8182/ 787-250-8185

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3.	Task 3: ArcGIS Online Commercial Landings and Census	Data
We	eb Maps	5
4.	Task 5: Technical Support	40

1. DOCUMENT CONTROL

VERSION	DATE	DESCRIPTION
2.0	10/25/2018	 Changing images on pages 19,20,21

2. Introduction

The following document summarizes Task 3: ArcGIS Online Commercial Landings and Census Data Web Maps and Task 5: Technical Support of the CFMC GIS Project: **Development of GIS access to coral and mesophotic reef data from Puerto Rico and the USVI, including commercial landings data**. These tasks were performed between May – September 2018.

Specific tasks include:

Task 3: ArcGIS Online Commercial Landings and Census Data Web Maps.

Task 3.1 Design and create feature class for Fisheries

- Task 3.2 Load fisheries feature class to CFMC geodatabase
- Task 3.4 Prepare Landings Register Data.

Task 3.5 Configure ArcGIS Online Web Maps

Task 5: Technical Support – (48 hrs)

- Configure USVI Commercial Landings Statistics Web Apps
- Configure USVI Commercial Landings Statistics Story Maps

3. Task 3: ArcGIS Online Commercial Landings and Census Data Web Maps.

Task 3.1 Design and create feature class for Fisheries

- The creation and design of the Commercial Fish Landings fishing zone historic maps was based on historic maps and the shapefiles of the fishing zones that CFMC delivered.
- The fishing zones areas between 1983 and 2016 was validated throughout a series of workshops with CFMC personnel between May and June 2018. Many scenarios were created based on historic maps (1980 and 1990 decade).
- The final product consists of a fishing zones feature classes per decade and within each decade several additional scenarios. The attribute that was created in the Fishing Zone Feature Classes was:
 - **Zone Names** Zone Unique Identifier

Task 3.2 Load fisheries feature class to CFMC geodatabase

• The Fishing Zones feature classes were loaded into the USVI_Zones geodatabase.



CFMC File Geodatabase and Feature Classes



Vector Map of the St. Thomas/ St.John of USVI (1980 Decade)





St.Croix of USVI (1980 Decade)



Vector Map of the St. Thomas/ St.John of USVI (1990 Decade) Scenario A



Vector Map of the St. Thomas/ St.John of USVI (1990 Decade) Scenario B



Vector Map of the St. Thomas/ St.John of USVI (1990 Decade) Scenario B



St.Croix of USVI (1990 Decade) Scenario A



St.Croix of USVI (1990 Decade) Scenario B



Vector Map of the St. Thomas/ St.John & St.Croix of USVI (2010) Scenario A



Vector Map of the St. Thomas/ St.John & St.Croix of USVI (2010) Scenario B

Task 3.4 Prepare Landings Register Data.

- The preparation, quality control and depuration process of the USVI commercial fish landings data, including the building of several geoprocessing models to process the data and the development of python scripts was carried out between October May-July 2018.
- Quality Control and depuration of USVILAN tables
 - The first step consisted in the depuration process of all raw data received by CFMC. The documents consisted of Excel tables that contained the attributes of all fished species in United States Virgin Islands (USVI). The CFMC Staff made a quality control of the information before delivering it to GMT.

USVILAN83.xls	USVILAN2012.xls
USVILAN84.xls	USVILAN2013.xls
USVILAN85.xls	USVILAN2014.xls
USVILAN86.xls	USVILAN2015.xls
USVILAN87.xls	USVILAN2016.xls
USVILAN88.xls	
USVILAN89.xls	
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USVILAN2004.xls	
USVILAN2005.xls	
USVILAN2006.xls	
USVILAN2007.xls	
USVILAN2008.xls	
USVILAN2009.xls	
USVILAN2010.xls	
USVILAN2011.xls	

All the Excel tables delivered by CFMC were imported into a File Geodatabase.
 GMT perfomed additional quality control and depuration processes of the USVI
 Tables imported. The image underneath is an excerpt of the GDB containing the standalone tables imported to the geodatabase.



 All The images underneath show the schema design and description of the raw tables. The fields that are highlighted in the image, were the fields that were used to make all the analysis.

eral	Editor Tracking	Fields	Indexes	Subtypes	Relationships	
		Field Nar	ne		Data Ty	ype 🔺
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<u>)</u> C	ODE				Text	
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P_0	CODE				Text	
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ION					Text	
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k an eld f	y field to see its p Properties	ropertie	s.	DBJECTID		¥ <u>I</u> mport
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an Id F ias	a new field, type a ny field, type	the name choose t	s. (e into an e the data ty	mpty row in pe, then ed	the Field Name co it the Field Propert	Import lumn, dick in ties.

Field Name	Description		
DATE	Date of the Reported Catch		
CENTER	Unique ID or code of the Fishing zone		
ID_CODE	N/A		
GEAR_CODE	Unique ID or code of the type of gear used to make the catch		
NO_TRIPS	Number of trips made		
SP CODE	Unique ID or code of the species		
TOT_WT	Amount of the weight reported of the catch		
MON	Month of the reported catch		
DAY	Day of the reported catch		
YEAR	Year of the reported catch		
Value	N/A		

- Geoprocessing models and Scripts
 - GMT performed an analytical process to obtain the statistical results of total weight for species per month per year for all USVI fishing zones. To execute this task, GMT, Corp designed and created a geoprocessing model on ArcGIS for Desktop. This model helped automatize the statistical analysis for all years and generate the different feature classes with the corresponding values.

The image below shows the model created in ArcCatalog using ModelBuilder, a programming module for geoprocessing workflows. **This model automates the total weight of fished species per month.**



The image below shows the model created in ArcCatalog using ModelBuilder, a programming module for geoprocessing workflows. This model automates the total weight of fished species per year.



The image below shows the feature classes (outputs) generated by the models that automated the total weight of fished species per month and per year.

- CFMC_Results_per_Month.gdb
 USVILAN1990_STSJ_A_WT_SP_M_Pivot
 USVILAN1990_STSJ_A_WT_SP_M_SumStat
 USVILAN1990_STSJ_A_WT_SP_Month
 USVILAN1990_STX_A_WT_SP_M_Pivot
 USVILAN1990_STX_A_WT_SP_M_SumStat
 USVILAN1990_STX_A_WT_SP_Month
 USVILAN1991_STSJ_A_WT_SP_M_Pivot
 USVILAN1991_STSJ_A_WT_SP_M_Pivot
 USVILAN1991_STSJ_A_WT_SP_M_Pivot
 USVILAN1991_STSJ_B_WT_SP_M_Pivot
 USVILAN1991_STSJ_B_WT_SP_M_Pivot
 USVILAN1991_STSJ_B_WT_SP_M_Pivot
 USVILAN1991_STSJ_B_WT_SP_M_Pivot
 USVILAN1991_STSJ_B_WT_SP_M_Pivot
 USVILAN1991_STSJ_B_WT_SP_M_Pivot
- □ CFMC_Results_per_Year.gdb
 □ USVI86_ST_SJ_WT_SP
 □ USVI86_ST_SJ_WT_SP_Pivot
 □ USVI86_ST_SJ_WT_SP_SumStat
 □ USVI86_STX_WT_SP
 □ USVI86_STX_WT_SP_Pivot
 □ USVI86_STX_WT_SP_SumStat
 □ USVI86_STX_WT_SP_SumStat
 □ USVILAN1990_STSJ_A_WT_SP_Pivot
 □ USVILAN1990_STSJ_A_WT_SP_SumStat
 □ USVILAN1990_STSJ_A_WT_SP_SumStat
 □ USVILAN1990_STSJ_A_WT_SP_Pivot
 □ USVILAN1990_STX_A_WT_SP_SumStat
 □ USVILAN1990_STX_A_WT_SP_SumStat
 □ USVILAN1990_STX_A_WT_SP_SumStat
 □ USVILAN1990_STX_A_WT_SP_Pivot
 □ USVILAN1990_STX_A_WT_SP_SumStat
 □ USVILAN1990_STX_A_WT_SP_Pivot
 □ USVILAN1991_STSJ_A_WT_SP_Pivot

 The PorcentajeEspecies script created for Puerto Rico Fish Landings Data and used to compute species that represent 80% or more of the total landings per villa per year was modified and used to compute the statistic for USVI fishing zones.

<pre>ile Edit Format Run Options Window Help Name: PorcentajeEspecie.py Purpose: Author: GMT Created: 26/10/2016 Copyright: (c) GMT 2016 Licence: <your licence=""> mport arcpy mport cav mport cav mport ca from decimal import Decimal</your></pre>	
Name: PorcentajeEspecie.py Purpose: Author: GMT Created: 26/10/2016 Copyright: (c) GMT 2016 Licence: <your licence=""> mport arcpy mport cay mport os mport re from decimal import Decimal</your>	
Name: PorcentajeEspecie.py Purpose: Author: GMT Created: 26/10/2016 Copyright: (c) GMT 2016 Licence: Licence: upport arcpy mport cav mport cav mport re from decimal import Decimal	
<pre>Furpose: Author: GMT Created: 26/10/2016 Copyright: (c) GMT 2016 Licence: <your licence=""> import arcpy import cav import cav import ca from decimal import Decimal</your></pre>	
Author: GMT Created: 26/10/2016 Copyright: (c) GMT 2016 Licence: <your licence=""> mport arcpy mport cav mport cav mport cav from decimal import Decimal</your>	
Author: GMT Created: 26/10/2016 Copyright: (c) GMT 2016 Licence: <your licence=""> import arcpy import cav import cav import cas import re from decimal import Decimal</your>	
Created: 26/10/2016 Copyright: (c) GMT 2016 Licence: <your licence=""> import arcpy import cay import cay import re from decimal import Decimal</your>	
Copyright (c) GMT 2016 Copyright (c) GMT 2016 Licence: <your licence=""> import arcpy import cav import cav import re from decimal import Decimal</your>	
<pre>copyright: (c) whi 2010 Licence: <your licence=""> import arcpy import cav import ca import re from decimal import Decimal</your></pre>	
import arcpy mport cav import cav import ca import re from decimal import Decimal	
mport arcpy mport cav import os mport re from decimal import Decimal	
Import cav Import os Import re from decimal import Decimal	
Import os Import re From decimal import Decimal	
mport re from decimal import Decimal	
from decimal import Decimal	
<pre>definit(self, id, weight): self.id = id</pre>	
self.name = ""	
self.weight = weight	
self.percent = 0	
Represents the names of a specie including its common, english and scientific	
names with its corresponding species id.	
class SpeciesName:	
<pre>definit(self, id, name, englishName, scientificName):</pre>	
self.id = id	
self.name = name	
self.englisnName = englisnName	
Self.ScientificName = ScientificName	
Represents a list of all the species name with its corresponding species id	
fextracted from a CSV file.	
Hass SpeciesNameList:	
det init (seif, speciesNameCSVF11e):	
self loadSpeciesNameList (speciesNameCSVFile)	

The image below shows an example of which species represent 80% of the fish landings reported for 1983 by fishing zone. The result of the script is an output table that has the name of each species in English and official scientific name. The output table also has the statistics of the total weight per species and the sum of all weights per species and per fishing zone. This result was subsequently published in a series of web maps and web applications.



	Cipotala	reta		and make in	1.	reuninen	1.		aques
AS	s - 1	$\times ~~ \sqrt{-f_{\rm f}}$	=C1						
4	A	В	D	E	F	G	н	1	J
1	Zone_Name	Species_Code	Common_Name	Scientific_Name	Weight	Percentage	Total_Percentage	Total_Weight	Input_Percer
2	C4	170809	Parrotfish	Epinephelus adscen	60225	25.2	81.2	193912.25	80.00%
3	C4	97648	Spiny lobster	Coryphaena equise	46684.25	19.6	81.2	193912.25	
4	C4	168845	Snappers - unspecif	Antennarlidae	38161.75	16	81.2	193912.25	
5	C4	72558	Conch, queen	Trachinotus falcatu	31573	13.2	81.2	193912.25	
6	CA	172250	Surgeonfish unspec	Priacanthidae	0730	4.1	81.2	193912.25	

Ba

 To manage all the csv tables produced by the python script that computes species that constitute 80% of total landings the geoprocessing model created for Puerto Rico Fish Landing data was modified and used for USVI data. This model imports all the csv tables to a standalone table in a file geodatabase through a batch import process.



The image below shows an example of the result of the batch importation process of the .csv tables to a file geodatabase standalone tables through the geoprocessing model.



 The geoprocessing model created to extract the total percentage per fishing zone of the 80% of the species catch standalone tables for Puerto Rico Fish Landings Data was reutilized for USVI data. The results were appended to the fishing zones feature classes for mapping purposes.



The image below shows an example of the result of the batch extraction process of the 80% total percentage value per fishing zone for all the file geodatabase standalone tables.

9 (Extraer_Po	rcentaje_x_Zona. N1986_ST_SJ_W N1986_STX_WT	.gdb T_SP_80_Percentage _SP_80_Percentage
Т	OBJECTID *	Zone_Name	Total_Percentage
,	1	003	84.4
ſ	2	C1	92.8
	3	C2	89
	4	C3	92.4
	5	C4	90.3
	6	C5	90.3
	7	C6	94.2
1	8	EEZ	85.7

 A geoprocessing model was created to calculate an assign to each fishing zone the total Weight in Pounds (TP). The result was appended to the fishing zones feature classes for mapping purposes.



The image below shows an example of the result of the batch calculation process of the total weight in Pounds (TW) per fishing zone for all the Landings Reported file geodatabase standalone tables.

		Results_GEAR_CODE USVILAN1990_GE USVILAN1990 Sta	Analisis.gdb AR_Stats_Pivot <mark>tistics</mark>	
USVILAN1991_Statistics				
- 1	OBJECTID*	ZONE NAME ICENTERI	Total Weight (lbs)	
,	OBJECTID-	001	Total Weight (lbs) 362543.65	
•	1	001 003	Total Weight (lbs) 362543.65 268972	
•	1 2 3	001 003 BBB	Total Weight (lbs) 362543.65 268972 27542	
•	1 2 3 4	001 003 BBB C1	Total Weight (lbs) 362543.65 268972 27542 46572	
•	0BJECTID [*] 1 2 3 4 5	001 003 BBB C1 C2	Total Weight (Ibs) 362543.65 268972 27542 46572 62335.5	
•	0BJECTID ⁻ 1 2 3 4 5 6	201e Name (CENTER) 001 003 BBB C1 C2 C3	Total Weight (Ibs) 362543.65 268972 27542 46572 62335.5 23250	
•	065EC1101 1 2 3 4 5 6 7	001 003 BBB C1 C2 C3 C4	Total Weight (lbs) 362543.65 268972 27542 46572 62335.5 23250 31928	
•	083EC1101 1 2 3 4 4 5 6 7 7 8	Clinical and a construction Clinical and a construction 001 003 003 0BB 01 01 C1 02 02 C3 02 02 C4 02 02	Total Weight (Ibs) 362543.65 268972 27542 46572 62335.5 23250 31928 18289.75	
•	083EC1101 1 2 3 4 5 6 7 8 9	2016 001 003 003 BBB 001 C1 001 C2 001 C3 001 C4 005 C6 005	Total Weight (Ibs) 362543.65 268972 27542 46572 62335.5 23250 31928 18289.75 721	
•	083EC1101 1 2 3 3 4 4 5 6 6 7 7 8 8 9 9 10	2010 NATHE (CENTER) 001 003 BBB C1 C2 C3 C4 C5 C6 TNE	Total Weight (Ibs) 362543.65 268972 27542 46572 62335.5 23250 31928 18289.75 721 44204.5	

 Another model was created to automate the process of generating tables for each year per fishing zones with the statistics of Total Weight per Gear Code. The results were appended to the fishing zones feature classes and used for representation and cartographic purposes.



The image below shows an example of the result of the calculation process of the Total Weight reported by Gear Code



 The Python Script programmed to automate the assignment of the gear code name, based on the gear code, as an alias to all fields was reutilized. The objective was to assign to the fishing zones feature class the total weight (lbs) per gear code statistics.

```
alteralias_FC_GEAR_Codes.py
🛃 *alteralias_FC_GEAR_Codes.py - C\GMT\Alberto\USVI\Analisis\GearCode_Analisis\Aliases_GearCode\alteralias_FC_GEAR_C.. — 🔲
File Edit Format Run Options Window Help
#-----
            module1
# Name:
# Purpose:
# Author:
           GMT, Corp
# Created:
             24/10/2016
# Licence: <your licence>
#---
import arcpy, os, csv
#gets the python file directory as a starting directory.
wrkSpace = os.getcwd()
#should use two backslashes in file path
arcpy.env.workspace = r"C:\GMT\Alberto\USVI\Analisis\GearCode Analisis\Aliases
# Diccionarios uno para mes y otro para especie
with open(wrkSpace+'\GearCode.csv', mode='r') as infile:
   reader = csv.reader(infile)
   with open(wrkSpace+'\CFMC_Species_short_new.txt', mode='w') as outfile:
       writer = csv.writer(outfile)
       species = {rows[0]:rows[1] for rows in reader}
fcs = arcpy.ListFeatureClasses()
for fc in fcs:
   print fc
   fieldList = arcpy.ListFields(fc, '*GCODES*', 'Double')
   for fieldFC in fieldList:
       try:
```

The image below shows an example of the result of the assignment of the gear code aliases to the fields through the python script.

ure Clas	s Properties		•				
eneral	Editor Trac	king XY (Coordinate System	Doma	ain, Resolu	tion and Tole	rance
alds	Indexes	Subtypes	Feature Extent	Relatio	nships	Represent	ation
		Field Name		De	ta Tyne		
GCODES	S ShortInt102	leiu Naille		Double	патурс		
GCODES	S ShortInt103	_		Double			
GCODES	S ShortInt105			Double			
GCODES	S ShortInt107			Double			
GCODES	S_ShortInt109			Double			
GCODES	S_ShortInt111			Double			
GCODES	S_ShortInt116			Double			
GCODES	S_ShortInt151			Double			
GCODES	S_ShortInt154			Double			
GCODES	S_ShortInt155			Double			
GCODES	S_ShortInt156			Double			
GCODES	S_ShortInt157			Double		_	
GCODES	S_ShortInt158			Double		¥	
ck any fie Field Prop	eld to see its p perties	roperties.					
Alias			Lobster Trap		1		
	III L values		Yes		1		
Allow N	ULL values						

- Final Products:
 - Commercial Landings for USVI was organized in four different file geodatabases: (1) per 1980 decade data, (3) per 1990 decade data, (3) per 2000 decade data and (4) 2010 decade data. This schema is reproduced for each decade between 1983 2016.

 ☐ 1980_Decade.gdb [2] ST_SJ_1983_A [2] ST_SJ_1984_A [2] ST_SJ_1985_A [2] ST_SJ_1986 [2] STSJ_83_80 [2] STSJ_84_80 [2] STSJ_85_80 [2] USVI83_ST_SJ_80_WT_SP [2] USVI84_ST_SJ_WT_SP [2] USVI86_ST_SJ_WT_SP [2] USVI86_ST_SJ_WT_SP [2] USVI86_ST_SJ_WT_SP [2] USVI86_ST_SJ_WT_SP 	 1990_Decade.gdb \$t_Croix_1990 \$t_Croix_1991_A \$t_Croix_1991_B \$T_S1_1991_A \$T_S1_1991_A \$T_S1_1991_A \$T_S1_1991_C \$T_S1_1990 \$TS1_1990 \$USVI90_STSJ_WT_S \$USVI90_STSJ_WT_S \$USVI91_STSJ_A_WT_ \$USVI91_STSJ_A_WT_ \$USVI91_STSJ_A_WT_ \$USVI91_STSJ_A_WT_S \$USVI91_STSJ_A_WT_S \$USVI91_STSJ_A_WT_S \$USVI91_STSJ_A_WT_S \$USVI91_STSJ_A_WT_S \$USVI91_STSJ_A_WT_S \$USVI91_STSJ_A_WT_S \$USVI91_STSJ_A_WT_S \$USVI1AN1990_STSJ_ \$USVILAN1991_STSJ_ \$USVILAN1991_STSJ_S 	2000_Decade.gdb Image: St_Croix_2000 Image: St_Croix_2001 Image: St_Croix_2003 Image: St_St_2000 Image: St_St_2000 Image: St_St_2000 Image: St_St_2000 Image: St_St_2001 Image: St_St_2002 Image: St_St_2002 Image: St_St_2003 Image: St_2003 Image: St_	 2010_Decade.gdb St_Croix_2010 STSJ_2010 STSJ_STX_2011_A STSJ_STX_2011_B STSJ_STX_2012_A STSJ_STX_2012_B STSJ_STX_2013_A STSJ_STX_2014_B STSJ_STX_2014_B STSJ_STX_2014_B STSJ_STX_2014_B STSJ_STX_2014_B STSJ_STX_2014_B STSJ_STX_2014_B STSJ_STX_2014_B STSJ_STX_2014_S STSJ_STX_2011_STSJ_WT_SP USVI2010_STSJ_WT_SP USVI2011_STSJ_B_WT_SP USVI2012_STSJSTX_A_WT_SP USVI2013_STSJSTX_A_WT_SP USVI2013_STSJSTX_A_WT_SP USVI2014_STSJSTX_A_WT_SP USVI2014_STSJSTX_A_WT_SP USVI2014_STSJSTX_A_WT_SP USVI2014_STSJSTX_A_WT_SP USVI2014_STSJSTX_A_WT_SP USVI2014_STSJSTX_A_WT_SP USVI2014_STSJSTX_A_WT_SP USVI2014_STSJSTX_A_WT_SP USVI2014_STSJSTX_B_WT_SP USVI2014_STSJSTX_STSJ_STX_SP USVI2014_STSJSTX_ST_STSJ_STSP USVILAN2010_STS_VT_SP USVILAN2010_STS_VT_SP USVILAN2010_STS_VT_SP USVILAN2010_STS_VT_SP USVILAN2010_STS_VT_SP
--	--	---	---

• All this information was published to the CFMC ArcGIS Online Organizational site (<u>https://cfmc.maps.arcgis.com</u>) in order to build the web maps.

Task 3.5 Configure ArcGIS Online Web Maps

Web Maps

Each year of Reported Fish Landing Statistics has a web map configured. All these web maps were configured in the CFMC ArcGIS Online Organizational Account (<u>https://cfmc.maps.arcgis.com</u>).

• 1983-1989 Decade

Title		
ST - SJ 1983 Commercial Fish Landings	Web Map	3
ST - SJ 1984 Commercial Fish Landings	Web Map	3
ST - SJ 1985 Commercial Fish Landings	Web Map	3
ST - SJ 1986 Commercial Fish Landings	Web Map	3
ST - SJ 1987 Commercial Fish Landings	Web Map	3
ST - SJ 1988 Commercial Fish Landings	Web Map	3
ST - SJ 1989 Commercial Fish Landings	Web Map	3
STX 1983 Commercial Fish Landings	Web Map	3
STX 1984 Commercial Fish Landings	Web Map	3
STX 1985 Commercial Fish Landings	Web Map	3
STX 1986 Commercial Fish Landings	Web Map	3
STX 1987 Commercial Fish Landings	Web Map	3
🖪 STX 1988 Commercial Fish Landings	Web Map	3

Web Maps for the 1983-1989 decade.

• **1990-1999 Decade**

1 - 16 of 34 in USVI_1990_1999 Filters: Type: Maps X Clear All

Title	
St_Croix_1990_Commercial Landings	Web Map
STSJ_1990_Commercial_Landings	Web Map
STSJ_1991_A_Commercial_Landings	Web Map
STSJ_1991_B_Map	Web Map
STSJ_1991_C_Commercial_Landings_Map	Web Map
STSJ_1992_A_Map	Web Map
STSJ_1992_B_Map	Web Map
STSJ_1992_C_Map	Web Map
STSJ_1993_A_Map	Web Map

Web Maps for the 1990-1999 decade.

• 2000-2009 Decade

Q	Q Search USVI_2000_2009					
1 - 10	6 of 20 in USVI_2000_2009 Filters: Type: Maps >	< Clear All				
	Title					
	ST_SJ_Landings_2000	١	Web Map			
	ST_SJ_Landings_2001	١	Web Map			
	ST_SJ_Landings_2002	١	Web Map			
	ST_SJ_Landings_2003	١	Web Map			
	ST_SJ_Landings_2004	١	Web Map			
	ST_SJ_Landings_2005	١	Web Map			
	ST_SJ_Landings_2006	١	Web Map			
	ST_SJ_Landings_2007	١	Web Map			
	ST_SJ_Landings_2008	١	Web Map			
	ST_SJ_Landings_2009	١	Web Map			
	STX 2000 Commercial Fish Landings	١	Web Map			
	STX 2001 Commercial Fish Landings	١	Web Map			
	TY 2002 Commented Fish Londing	1	NA/- - N/			

Web Maps for the 2000-2009 decade.

• 2010-2016 Decade

Title	
STSJ_2010_MAP	Web Map
STSJ_STX_2012_B_MAP	Web Map
STSJ_STX_2013_A_MAP	Web Map
STSJ_STX_2013_B_MAP	Web Map
STSJ_STX_2014_A_MAP	Web Map
STSJ_STX_2014_B_MAP	Web Map
STSJ_STX_2015_A_MAP	Web Map
STSJ_STX_2015_B_MAP	Web Map
STSJ_STX_2016_A_MAP	Web Map
STSJ_STX_2016_B_MAP	Web Map
STSJ_STX_A_2011_MAP	Web Map
STSJ_STX_A_2012_MAP	Web Map
STSJ_STX_B_2011_MAP	Web Map
STX_2010_MAP	Web Map

Web Maps for the 2010-2016 decade.
ArcGIS Platform Implementation Caribbean Fisheries Management Council July – September 2018 ArcGIS Online Commercial Fish Landings and Census Data Web Maps – USVI

Each web map is composed of two main layers: (1) fishing zone commercial landings statistics layer (2) Standalone table with the species that represent the 80% of the total weight of species reported for each fishing zone.



1983 Commercial Landings Reported Statistics Web Map

Example of web map configuration for the 1983-1989 decade

1990 Commercial Landings Reported Statistics Web Map



Example of web map configuration for the 1990-1999 decade

2001 Commercial Landings Reported Statistics Web Map



Example of web map configuration for the 2000-2009 decade

2010 Commercial Landings Reported Statistics Web Map



Example of web map configuration for the 2010-2016 decade

For each web map, the following elements were configured:

- Transparency
- Visibility Range
- Symbology
- Pop-Up (Fishing Zones feature layers)
- Pie Graph in Pop-Up representing Gear Codes (Fishing Zones feature layer)



Zones Pop-Up and Pie Graph Configuration

ArcGIS Platform Implementation Caribbean Fisheries Management Council July – September 2018 ArcGIS Online Commercial Fish Landings and Census Data Web Maps – USVI

• Metadata, Credits and Tags were configured for each of the web maps and feature layers.

iome Gallery Map Scene Groups Content Organization		🖲 Graciela 🗸	Q	
ST - SJ 1983 Commercial Fish Landings 🖌 Edit				
Overview Usage Settings		1-1-1-2-24		
✓ Edit Thumbnail		Ор	en in Map Vi	ewer
This Web Map shows commercial fish landings statistics for 1983 per fishing zones for St. / Ed Thomas and St. John, US Virgin Islands.	it	Oper	in ArcGIS D	esktop
■ Web Map by cfmc_pr			Property	tion
Created: Aug 28, 2018 Updated: Sep 30, 2018 View Count: 108			sate Fresenta	ition
★ Add to Favorites		Cre	ate Web Ap	⊳ ∨
Description 🗸 Ed	it		Share	
This web map shows commercial fish landings statistics for 1983 per fishing zones for St. Thomas and St. John, US Virgin Island: Data on commercial fish landings are provided by fishermen to Division of Fish and Wildlife of the USVI Department of Plannin and Natural Resources. Data is officially transferred to the NOAA- Southeast Fisheries Science Center (SEFSC). The Caribbean Fisheries Management Council (CFMC) obtained the data from the SEFSC to execute this project. The Caribbean Fishery Management Council (CFMC) is one of eight regional fishery management councils, established under P 42-265 (approved on April 13, 1976), now known as the Magnuson-Stevens Act (the Act) as amended in 1996 and 2007 als called Sustainable Fisheries Act, for the conservation and orderly utilization of the fishery resources of the United States of America The Caribbean Fishery Management Council is responsible for the creation of management plans for fishery resources (FMPs) i the US Caribbean Exclusive Economic Zone (EEZ) off PR and the USVI. This initiative seeks to incorporate geographic informatio systems to visualize and analyze patterns and tendencies in commercial fish activities in USVI. It also seeks to provide access to thi valuable information to scientists, students, educators, fishermen and the general public.	Э L D D л л з	Item Informat Low Low Details Size: 8 K8 Shared with: Eve Fish Landings (Pe Caribbean Fishe * * * * *	ion ovement: Ad ryone (public esca Comerci ry Managem	Learn mor Hig d terms of use
Layers		H Y R		
St. Thomas - St. John 1983				
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World Ocean Reference				
Tables	Fol	der usvi_1983_1989		Move
STS1.83 Commercial Landings Par Spacies	Cat	tegories		🖍 Edit
orog_continencial_canoninge_tel_operates	This	item has not been	categorized.	
Terms of Use 🖉 Edit	Tac	15		🖌 Edit
Add any special restrictions, disclaimers, terms and conditions, or limitations on using the item's content.	CFN	MC, USVI, 1983, St. T	'homas, St. Jo	ohn,
Comments (0) 🔊	Cre	edits (Attributio	n)	🖌 Edit
	Cari	ibbean Fisheries, M	anagement C	Council
Leave a comment. Leave a comment. Comment	(CF) Cen the Res An <i>a</i> Cor	MC) NOAA- Southe nter (SEFSC) Division USVI Department o ources. David Peña Ilyst Geographic Ma p.	ast Fisheries n of Fish and ' f Planning an & Alberto Mil apping Techn	Science Wildlife of d Natural Ilán - GIS ologies,

All feature layers are hosted on CFMC's ArcGIS Organizational Account organized under a folder named after the corresponding decade.

Content		1/11 105344			
My Content My Favorites My Grou	s My Organization	n Living Atlas	he frances of		
- Add Item 🗸 🛛 🕅 Create 🗸	Q Se	earch USVI_1983_1989			
Folders 🖴	lew 17 - 32	2 of 58 in USVI_1983_1989		Sort	t by: Date Modified 🗸
Q, Filter folders		Title			Modified
Mesofoticos		ST_SJ_1983_Commercial_Fish_Landings	Feature Layer (hosted)	· ★ ···	Sep 30, 2018
Mesophotics		ST_SJ_1984_Commercial_Fish_Landings	Feature Layer (hosted)	• * …	Sep 30, 2018
Puerto Rico		ST_SJ_1989_Commercial_Fish_Landings	Feature Layer (hosted)	• * …	Sep 30, 2018
USVI		ST_SJ_1988_Commercial_Fish_Landings	Feature Layer (hosted)	· → ···	Sep 30, 2018
USVI_1983_1989		ST_SJ_1987_Commercial_Fish_Landings	Feature Layer (hosted)	⊛ ★ ···	Sep 30, 2018
USVI_1990_1999		ST_SJ_1985_Commercial_Fish_Landings	Feature Layer (hosted)	⊛ ★ ···	Sep 30, 2018
USVI_2000_2009		STT_SJ_1986_Commercial_Fish_Landings	Feature Layer (hosted)	@ * ···	Sep 30, 2018
05012010_2010	•	🔣 ST - SJ 1983 Commercial Fish Landings	Web Map	• * …	Sep 30, 2018
✓ Categories 🖌		🔣 ST - SJ 1984 Commercial Fish Landings	Web Map	• * …	Sep 30, 2018
Cartucho		🕼 ST - SJ 1985 Commercial Fish Landings	Web Map	• * …	Sep 30, 2018
Story Maps PR Mesophotic Reefs		🔣 ST - SJ 1986 Commercial Fish Landings	Web Map	· · · ·	Sep 30, 2018
Desembarcos 1990 (Puerto Rico)			147 I. M.	a +	0 00 0040

Commercial fish landings content for USVI (webmaps, web apps and feature layers) is shared within the Commercial Fish Landings (Pesca Comercial) USVI Group.



The Group has been set up as public for everyone to be able to view its contents.

Overview Content Members Settings	
Group Settings	
Delete Restaution	
Prevent this group from being accidentally deleted.	Delete Group
Who can view this group?	
Only group members	
People in the organization (Caribbean Fishery Management Council)	
Everyone (public)	
Who can join this group?	
Those who request membership and are approved by a group manager	
Only those invited by a group manager	
Anyone	
Who can contribute content to the group?	
Group members	
Only group owner and managers	
Sort group content by	
Title 🗢 Ascending	

A second group for data download was created. This group is named Data Download Commercial Fish Landings (Pesca Comercial) USVI



This group contains the fish landings data for download.

Overview Content Members Settings	ercial Fish Landings (Pesca Co	mercial) l	JSVI		
Refine Content	Q Search group content				
✓ Group Categories	1 - 16 of 34				Sort by: Title 🗸 ↑
No Group Categories Yet	Title		Modified	Owner	View Count
Categories allow group members to	ST_SJ_1983_Commercial_Fish_Landings	··· ★ ···	Sep 30, 2018	cfmc_pr	84
simple way to browse content in the	Image: ST_SJ_1984_Commercial_Fish_Landings	· · · ·	Sep 30, 2018	cfmc_pr	41
group.	Image: ST_SJ_1985_Commercial_Fish_Landings	₀ ★ …	Sep 30, 2018	cfmc_pr	26
Set up group categories	Image: ST_SJ_1987_Commercial_Fish_Landings	₀ ★ ···	Sep 30, 2018	cfmc_pr	23
✓ Item Type	ST_SJ_1988_Commercial_Fish_Landings	₀ ★ ···	Sep 30, 2018	cfmc_pr	25
Maps	Image: ST_SJ_1989_Commercial_Fish_Landings	₀ ★ …	Sep 30, 2018	cfmc_pr	26
Scenes	ST_SJ_2000_Commercial_Fish_Landings	₀ ★ ···	Sep 30, 2018	cfmc_pr	17
Apps Tools	ST_SJ_2001_Commercial_Fish_Landings	₀ ★ ···	Sep 30, 2018	cfmc_pr	11
Files	ST_SJ_2002_Commercial_Fish_Landings	₀ ★ ···	Sep 30, 2018	cfmc_pr	10
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4. Task 5: Technical Support

• Configure USVI Commercial Landings Statistics Web Apps

Web Maps configured in Task 3 were used as baseline to build web applications using ArcGIS Web App Builder.

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📔 USVI_2010_2016	•	STX_Landings_1983	Web Mapping Application			

Each web application contains basic navigation tools and four configured widgets for visualizing map legend, selecting layers, changing base map and the related table widget that shows the 80% of the total weight (lbs) per species for each fishing zone.

Individual web applications were configured for each year between 1983 and 2016. Below is an example of the 1983 web application.

1983 St. Thomas /St.John Commercial Landings Reported Statistics Web App



• Metadata, Credits and Tags were configured for each of the web applications.

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All web applications are hosted on CFMC's ArcGIS Organizational Account organized under a folder named after the corresponding decade.

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🗎 USVI_1990_1999		ST_SJ_Landings_1988	Web Mapping Application	()	k	Sep 30, 2018
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Commercial fish landings content for USVI (webmaps, web apps and feature layers) is shared within the Commercial Fish Landings (Pesca Comercial) USVI Group.



• Configure USVI Commercial Landings Statistics Story Maps

Story Maps combine authoritative maps with narrative text, images, and multimedia content. They are a medium for harnessing the power of maps and geography to tell a story.

As a culmination of the USVI Commercial Landings Statistics Project, a story map per decade was created to share with the public the data and analysis results of the historic commercial landings reported data between 1983 and 2016.



The story maps index the configured web applications described in the "Configure USVI Commercial Landings Statistics Web Apps" section.

Through these story maps, the history of commercial fish landings in USVI can be recreated, studied and analyzed. With the use of Web GIS this historical data, originally in table format, is brought to life in an interactive medium, bringing new insights to scientists, researchers, educators, fishermen and the general public.



1983 -1989 Commercial Landings Reported Statistics Story Map

1990-1995 Commercial Landings Reported Statistics Story Map



1990-1995 Commercial Landings Reported Statistics Story Map



2000-2009 Commercial Landings Reported Statistics Story Map



2010-2016 Commercial Landings Reported Statistics Story Map





ArcGIS Platform Implementation at the Caribbean Fisheries Management Council

March – June 2018

Task 4: ArcGIS Online Mesophotic Reefs Web Maps

Task 5: Technical Support

September 28th, 2018

Prepared for: Graciela García Moliner FMP and Habitat Specialist Caribbean Fisheries and Management Council

Prepared by: Geographic Mapping Technologies, Corp. 54 Calle Mayagüez San Juan, Puerto Rico 00917 Teléfonos: 787-250-8182/ 787-250-8185

Table of Contents

1.	Introduction3
2.	Task 4: ArcGIS Online Mesophotic Reefs Web Maps4
3.	Task 5: Technical Support

1. Introduction

The following document summarizes Task 4: ArcGIS Online Mesophotic Reefs Web Maps and Task 5: Technical Support of the CFMC GIS Project: **Development of GIS access to coral and mesophotic reef data from Puerto Rico and the USVI, including commercial landings data**. These tasks were performed between March-June 2018.

Specific tasks include:

Task 4: ArcGIS Online Mesophotic Reefs Web Maps

Task 4.1 Design and create feature class for Mesopohotic Reefs Sites

Task 4.2 Design and create feature class for Mesophotic Reefs Transects by Depth Range

Task 4.3 Load Mesophotic Reef Sites and Mesophotic Reefs Transects by Depth Range feature class to CFMC geodatabase.

Task 4.4 Configure ArcGIS Online Web Map for Mesophotic Reef Sites and configure videos and pictures

Task 5: Technical Support – (60 hrs)

- Configure Mesophotic Reefs Web Apps
- Configure Mesophotic Reefs Story Map

2. Task 4: ArcGIS Online Mesophotic Reefs Web Maps

Task 4.1 Design and create feature class for Mesopohotic Reefs Sites

Mesophotics Reefs Geodatabase was organized in datasets, one for Puerto Rico and the other for USVI data. Each dataset is composed of mesophotic benthic habitats feature classes per study site derived from the shapefiles provided by CFMC.

In addition to the feature classes, relationship classes were established to configure image and video attachments.



Task 4.2 Design and create feature class for Mesophotic Reefs Transects by Depth Range

CFMC staff decided not to process and publish the transect and study site shapefiles in order not to reveal to the public the exact location of the study site and thus protect this ecologically valuable habitats.

Instead, the bathymetry data was processed and published for each of the study sites to provide a general overview of the study area and its topographic characteristics.

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		mesophotics

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🚘 Decade_1983_89	Tourmaline Bathymetry TPK	Tile Layer (hosted)	• * •••	Sep 27, 2018
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Mesophotics	Abrir La Sierra Bathymetry TPK	Tile Layer (hosted)	• * •••	Sep 27, 2018
Puerto Rico				
USVI_1983_1989				

Published Tile packages (TPK)

Task 4.3 Load Mesophotic Reef Sites and Mesophotic Reefs Transects by Depth Range feature class to CFMC geodatabase.

Mesophotic reefs benthic maps were imported into feature class. Once imported, features were dissolved based on benthic habitat type. Following the dissolve operation, image and video attachments were configured. Video selection was completed by CFMC. Bathymetry maps were processed and transformed into tile packages for upload to CFMC Organizational Account.

Task 4.4 Configure ArcGIS Online Web Map for Mesophotic Reef Sites and configure videos and pictures

A total of 6 web maps were configured, one for each Mesophotic Reef Sites.

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1 - 6 of 6 in Mesophotics Filters: Type: Maps × 0	Clear All	Sort by	Date Modified 🗸 🗸
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Hábitat Béntico El Seco de Vieques	Web Map	Ø ★ …	Aug 7, 2018
🔲 🕼 Hábitat Béntico Abrir La Sierra	Web Map	⊙ ★ …	Aug 7, 2018
🔲 🖪 Hábitat Béntico Bajo de Sico Web Map	Web Map	Ø ★ ···	Aug 7, 2018

With the exception of the Desecheo Web Map, each web map is composed of two main layers: (1) Mesophotic map and (2) Bathymetry map. The bathymetry layer is a Hosted Tile Package. The Tile package consists of a set of tiles (images) from a raster published as a web tile in ArcGIS Online.

Hábitat Béntico Desecheo Web Map



http://cfmc.maps.arcgis.com/home/webmap/viewer.html?webmap=36bb6e392bc94e51b8a e75301f85d133

\leftrightarrow \rightarrow C \triangle 0 Not secure | cfmc.maps.arcgis.com/home/webmap/viewer.html?webmap=dde8e4e74dd74c838b37c68e4ba151a3 ☆ **G** : Home 🗸 Hábitat Béntico Lang Bank 🥒 New Map 🐃 Create Presentation 🛭 🗟 Graciela 🗢 🔄 Details 🛛 📇 Add 👻 📝 Edit 🛛 🔡 Basemap 🛛 🔛 Analysis 🔚 Save 👻 📾 Share 🚔 Print 👻 🚸 Directions 🚔 Measure 🋄 Bookmarks 🛛 Find address or place Q 958 0 🗉 🗄 + *₩* Contents 🕑 Lang Bank Mesophotic Map ____ 791 🕨 🗷 Lang Bank Bathymetry Map • 🔘 Oceans Lang Bank Esri.com ArcGIS Marketplace Contact Esri Report Abuse Help . Terms of Use Esri, DeLorme, NaturalVue | Esri, DeLorme

Hábitat Béntico Lang Bank

http://cfmc.maps.arcgis.com/home/webmap/viewer.html?webmap=dde8e4e74dd74c838b3 7c68e4ba151a3

Hábitat Béntico Tourmaline



http://cfmc.maps.arcgis.com/home/webmap/viewer.html?webmap=b63b99e305f144c89b4 1f2592786931c

Hábitat Béntico El Seco de Vieques



http://cfmc.maps.arcgis.com/home/webmap/viewer.html?webmap=1be764760a884575b26 f113dd8a091c0

Hábitat Béntico Abrir La Sierra



http://cfmc.maps.arcgis.com/home/webmap/viewer.html?webmap=0934f9ec92aa4284b296 e6d49fd7514f

Hábitat Béntico Bajo de Sico Web Map



http://cfmc.maps.arcgis.com/home/webmap/viewer.html?webmap=d9ab1107cc604bcbbe4 b1d4ef4c5f700

For each web map, the following elements were configured:

- Transparency
- Visibility Range
- Symbology
- Pop-Up
- Images representing each of the benthic habitats per Mesophotic Reef Site.



Images are visible when clicking on a benthic habitat feature.

• Metadata, Credits and Tags were configured for each of the web maps, feature layers and tile packages.

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R. García Sais, Jorge Saba Consejo de Pesa del Carib	ter-Clavell, René Esteves, Jorge Capella y Milton Carlo, publicado en Diciembre 2011 y auspiciado por el e y la National Oceanographic and Atmospheric Administration (NOAA).	Low	Hig
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i nis investigation identifie and provides a quantitativ the main mesophotic bent	s and maps the main benthic habitat types found at £1 Seco de Vieques within the 30 - 50 m depth range e and qualitative characterization of the predominant sessile-benthic and fish communities associated to hic habitats.	cfmc_pr	
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Terms of Use	× Eds	Caribbean Fisheries Manage (CFMC) Web Map Creation:	ement Council Patricia Matos

All feature layers and tile packages are hosted on CFMC's ArcGIS Organizational Account organized under a folder named Mesophotics.

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Reports for each of the 6 study areas are hosted on CFMC's ArcGIS Organizational Account under a folder named Documentos PDFs Reportes Mesofóticos.

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Mesophotics		📄 🗎 Bajo de Sico Final Report	PDF	3 🖈 🚥 Sep 27, 2018
😑 Puerto Rico	- 11	Desecheo Final Report	PDF	3 🖈 🚥 Sep 27, 2018
USVI	•			

Mesophotic Reefs content (webmaps, web apps, feature layers, tile packages, and reports) is shared within the Arrecifes Mesofóticos – Mesophotic Reefs Group.



The Group has been set up as public for everyone to be able to view its contents.

Arrecifes Mesofóticos - Mesophotic Reefs

Overview Content Members Settings	
Group Settings	
Delete Protection	Delete Grour
Prevent this group from being accidentally deleted.	
Who can view this group?	
Only group members	
People in the organization (Caribbean Fishery Management Council)	
everyone (public)	
Who can join this group?	
Those who request membership and are approved by a group manager	
Only those invited by a group manager	
Anyone	
Who can contribute content to the group?	
● Group members	
Only group owner and managers	
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A second group for data download was created. This group is named Descarga de Datos Arrecifes Mesofóticos.

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	This Group contains mesophotic reefs data available for download.	

This group contains the mesophotic benthic habitats feature layers and final reports for download.

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> Shared	Tourmaline Final Report	· · · · ·	Sep 27, 2018	cfmc pr	19

3. Task 5: Technical Support

• Configure Mesophotic Reefs Web Apps

Web Maps configured in Task 4 were used as baseline to build web applications using ArcGIS Web App Builder.

Content	HAT AN HALL CARD	
My Content My Favorites My Groups	My Organization Living Atlas	
+ Add Item 🗸 🛛 🕅 Create 🗸	Q. Search Mesophotics	· · · ·
Folders 🖴 <u>New</u>	1 - 8 of 8 in Mesophotics Filters: Type: Apps × Clear All	Sort by: Date Modified \checkmark \downarrow
Q Filter folders	Title	Modified 🔻
A	Mesophotic Reef Data Dowloand Web Mapping A	upplication 👍 🛧 🚥 Sep 27, 2018
Decade_1983_89	🔲 🔳 Arrecifes Mesofóticos: Hébitats profundos de Puerto Rico 🛛 Web Mapping A	Application 🚱 ★ 🚥 Sep 27, 2018
Documentos PDFs Reportes Mesofoticos	e Islas Virgenes Americanas	
Mesonhotics	Hábitat Béntico Lang Bank Web Mapping A	Application 🕜 ★ 🚥 Sep 27, 2018
Rueste Pice	Hábitat Béntico El Seco de Vieques Web Mapping A	opplication 🕜 ★ 🚥 Sep 27, 2018
	🔲 🔟 Hábitat Béntico Abrir La Sierra 🛛 Web Mapping A	Application 🚱 ★ 🚥 Sep 27, 2018
USVI 1983 1989	Hábitat Béntico Tourmaline Web Mapping A	Application 3 🛠 🚥 Sep 27, 2018
- LISVI 1000 1000	Hábitat Béntico de Desecheo Web Mapping A	Application 🚱 ★ ••• Sep 27, 2018
N Connection	Hébitat Béntico de Bajo de Sico Web Mapping A	Application 3 * Sep 27, 2018
✓ Categories ≠		e co operatione

Each web application contains basic navigation tools and three configured widgets for visualizing map legend, selecting layers and changing base map respectively.
Hábitat Béntico Desecheo Web Map



http://cfmc.maps.arcgis.com/apps/webappviewer/index.html?id=9cb6f7e0741e44469b97da 1f36cf9e74



Hábitat Béntico Lang Bank

http://cfmc.maps.arcgis.com/apps/webappviewer/index.html?id=b5913f944bdc4b4cbf3b7d 4ee20880b6

Hábitat Béntico Tourmaline



http://cfmc.maps.arcgis.com/apps/webappviewer/index.html?id=ab07a8e0cdd0478e92f2d4 2753043d54

Hábitat Béntico El Seco de Vieques



http://cfmc.maps.arcgis.com/apps/webappviewer/index.html?id=bc19d51c94c049978cebd2 d345a226b3

Hábitat Béntico Abrir La Sierra



http://cfmc.maps.arcgis.com/apps/webappviewer/index.html?id=5bae97dbcb604572b65b3 37ab43aca5e

Hábitat Béntico Bajo de Sico Web Map



http://cfmc.maps.arcgis.com/apps/webappviewer/index.html?id=abe498aedb844a309e9fd5 a0741f046e • Metadata, Credits and Tags were configured for each of the web applications.

Hábitat Bénti	co Lang Bank 🖌 Edit			
Overview Usage Se	ttings			
/ Edit Thumbnail	Aplicación web que muestra imágenes, características y datos de hábitats bénticos y da batimétricos para Lang Bank, St. Croix, USVI	atos 🖌 Edit	View Applica Edit Applica	tion
	Web Mapping Application by cfmc_pr		Download	ł
* Add to Favorites	Created: May 17, 2018 Updated: Sep 28, 2018 View Count: 220		Share	
Description		🖌 Edit	Item Information	Learn more
El contenido de la aplicac Benthic Habitats and Asso M. Williams, Jorge Sabate Pesa del Caribe y la Nation	ión web Hábitst Béntico Lang Bank está basado en datos obtenidos como parte del estu: ciated Reef Communities at Lang Bank, st. Croix, USVI preparado por el Dr. Jorge R. Gan Crolavell, René Esteves and Miton Carlo, publicado en Agosto de 2014 y auspiciado por sal Oceanographic and Atmospheric Administration (NOAA).	dio Mesophotic rcía Sais, Stacey r el Consejo de	Low Low Top Improvement: A	Hig dd terms of use
Esta investigación identifi Bank y provee una caracte	ca y mapea los principales hábitats bénticos encontrados a profundidades entre 30-50 / rización cuantitativa y cualitativa de los comunidades bénticas y comunidades de peces e	metros en Lang incontradas.	Details Size: 62 KB	
Este trabajo persigue com	partir de una manera visual e interactiva los productos de GIS generados como parte del	estudio.	Shared with: Everyone (publ API: JavaScript	ic)
The content of Hábitat B Mesophotic Benthic Habit Stacey M. Williams, Jorge Council (CFMC) and the N	éntico Lang Bank web application is based on data acquired as part of the August 20 ats and Associated Reef Communities at Lang Bank, st. Croix, USVI prepared by Dr. Jorg Sabater-Clavell, René Esteves and Milton Carlo and sponsored by the Caribbean Fisherie ational Oceanographic and Atmospheric Administration (NOAA).	14 study titled: e R. García Sais, es Management		
This investigation identifie provides a quantitative an main benthic habitats.	a and maps the main benthic habitat types found at Lang Bank within the 30 - 50 m depth d qualitative characterization of the predominant sessile-benthic and fish communities ass	range and ociated to the	Owner (a) cfmc_pr	🛓 Change Owne
This work seeks to share in	a visual and interactive way the GIS data products generated as part of this study.		Folder i Mesophotics	Mov
Terms of Use		🖉 Edit	Categories	/ Edi
Add any special restrictions	disclaimers, terms and conditions, or limitations on using the item's content.		This item has not been categ	orized.
Comments (0)			Tags	∕ Edi
Leave a comment.			Mesophotic, app, mesophot habitats, St. Croix	s, mesopnotics, ic reefs, benthic
Leave a comme	nt.		Credits (Attribution)	/ Edi
		Comment	Caribbean Fisheries Manage (CFMC) Web App Creation: I Intern Geographic Mapping	ment Council Noel Sánchez - Technologies,

All web applications are hosted on CFMC's ArcGIS Organizational Account organized under a folder named Mesophotics.

My Content My Favorites My Groups	My Organiza	tion Living Atlas				
Add Item 🗸 📲 Create 🗸	Q	Search Mesophotics				■ = =
Folders 🖴 Ne	- 1 -	3 of 8 in Mesophotics Filters: Type: Apps \times Clear All			Sort	by: Date Modified 🗸 🗸
Q, Filter folders		Title				Modified
	•	🔝 Hábitat Béntico Abrir La Sierra	Web Mapping Application	• *	••••	Sep 28, 2018
Decade_1983_89		Hábitat Béntico El Seco de Vieques	Web Mapping Application	0 ×		Sep 28, 2018
 Documentos PDFs Reportes Mesofoticos 		Hábitat Béntico Tourmaline	Web Mapping Application	G *		Sep 28, 2018
Mesophotics		🔟 Hábitat Béntico Lang Bank	Web Mapping Application	• *	••••	Sep 28, 2018
Puerto Rico		🔝 Mesophotic Reef Data Dowloand	Web Mapping Application	4 ★		Sep 27, 2018
USVI USVI_1983_1989		Arrecifes Mesofóticos: Hébitats profundos de Puerto Rico e Islas Virgenes Americanas	Web Mapping Application	0 *		Sep 27, 2018
- LICVI 1000 1000	•	Hábitat Béntico de Desecheo	Web Mapping Application	• *		Sep 27, 2018
		Hébitat Béntico de Baio de Sico.	Web Mapping Application	a +		Sep 27, 2018

Mesophotic Reefs web applications are shared within the Arrecifes Mesofóticos – Mesophotic Reefs Group. The Group has been set up as public for everyone to be able to view its contents.



The Group has been set up as public for everyone to be able to view its contents.

• Configure Mesophotic Reefs Story Maps

Story Maps combine authoritative maps with narrative text, images, and multimedia content. They are medium for harnessing the power of maps and geography to tell a story.

As a culmination of the Mesophotics Reefs Project, a story map was built to share with the public the results of the scientific research and investigations sponsored by the CFMC and the National Oceanographic and Atmospheric Administration (NOAA) carried out between 2005 – 2014. The studies were an effort towards characterization of deep reefs and associated marine communities from Puerto Rico (PR) and the U. S. Virgin Islands (USVI).

The story maps features content, images, videos and maps of six deep reef habitats in Puerto Rico and the USVI:

- Desecheo, Puerto Rico
- Bajo de Sico Seamount, Mona Passage, Puerto Rico
- Abrir La Sierra, Puerto Rico
- El Seco de Vieques Puerto Rico
- Tourmaline Reef, Puerto Rico
- Lang Bank, St. Croix, USVI

The story map contains maps, beautiful images and videos of deep reefs in Puerto Rico and the USVI showcasing the immense diversity and striking beauty of these unexplored depths.



http://cfmc.maps.arcgis.com/apps/Cascade/index.html?appid=5551f885e3b24e9d8fbda1a1 43c87008

Arrecifes Mesofóticos

Inicio Desecheo Bajo de Sico Abrir La Sierra El Seco de Vieques Lang Bank. Tourmaline Reportes Científicos. Créditos 🧪 Edit 🗴 Portal CFMC 🝕

Este proyecto es un esfuerzo para caracterizar los arrecifes a profundidades entre los 30 y 50 metros y las comunidades marinas de Puerto Rico e Islas Vírgenes de los Estados Unidos.



Tabs were configured for each of the six study sites.





For each study site, authoritative content was included.



The web applications were embedded within the story map to highlight the location of the study site and share the mesophotic benthic habitat maps and bathymetry maps.



The scientific reports were included within the story map and are available for download.



A Credits Tab acknowledges all resources involved in the creation of the Mesophotics Reefs Project.

URL for the complete story map:

http://cfmc.maps.arcgis.com/apps/Cascade/index.html?appid=5551f885e3b24e9d8fbda1a1 43c87008 • Metadata, Credits and Tags were configured for the Story Map.



All web applications are hosted on CFMC's ArcGIS Organizational Account organized under a folder named Mesophotics.

My Content My Favorites My Groups	My Organizati	on Living Atlas					
- Add Item 🗸 🛛 👔 Create 🗸	Q	Search Mesophotics					
Folders 🖴 New	1 - 8	of 8 in Mesophotics Filters: Type: Apps \times Clear All				Sort	by: Date Modified 🗸 🕔
Q Filter folders		Title					Modified •
		Hábitat Béntico Abrir La Sierra	Web Mapping Application	0	*		Sep 28, 2018
Decade_1983_89		Hábitat Béntico El Seco de Vieques	Web Mapping Application	0	*		Sep 28, 2018
Documentos PDFs Reportes Mesofoticos		Hábitat Béntico Tourmaline	Web Mapping Application	0	*		Sep 28, 2018
Mesophotics		Hábitat Béntico Lang Bank	Web Mapping Application	G	*		Sep 28, 2018
🚘 Puerto Rico		Mesophotic Reef Data Dowloand	Web Mapping Application	4	*		Sep 27, 2018
USVI		Arrecifes Mesofóticos: Hábitats profundos de Puerto Rico e Islas Virgenes Americanas	Web Mapping Application	0	*		Sep 27, 2018
- LICV/L4000_4000		Hábitat Béntico de Desecheo	Web Mapping Application	0	*		Sep 27, 2018
✓ Categories ✓		Hábitat Béntico de Bajo de Sico	Web Mapping Application	G	*		Sep 27, 2018

Mesophotic Reefs Story Map was shared within the Arrecifes Mesofóticos – Mesophotic Reefs Group. The Group has been set up as public for everyone to be able to view its contents.





ArcGIS Platform Implementation at the Caribbean Fisheries Management Council

Task 6: Technology Transfer and Trainings Report

September 24th, 2018

Prepared for: Graciela García Moliner FMP and Habitat Specialist Caribbean Fisheries and Management Council

Prepared by: Geographic Mapping Technologies, Corp. 54 Calle Mayagüez San Juan, Puerto Rico 00917 Teléfonos: 787-250-8182/ 787-250-8185

ArcGIS Platform Implementation Caribbean Fisheries Management Council Task 6: Technology Transfer and Trainings Report

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Addendum 1: ArcGIS Desktop 2 – Sept 12-14, 2018	7

Introduction

The following document summarizes Task 6: Technology Transfer and Trainings of the CFMC GIS Project: **Development of GIS access to coral and mesophotic reef data from Puerto Rico and the USVI, including commercial landings data**. ArcGIS Desktop 1 and ArcGIS Dektop 2 trainings were held at GMT, Corp. facilities in Hato Rey, from September 10, 2018 through September 14, 2018. A total of four persons participated in both training sessions.

This document provides a brief description of the courses offered as well as a copy of the assistance sheets and evaluation forms.

ArcGIS Platform Implementation Caribbean Fisheries Management Council Task 6: Technology Transfer and Trainings Report

Course: ArcGIS Desktop 1

Complete Course Title: ArcGIS 1: Introduction to GIS

Duration: 2 Days

Date: September 10, 2018 – September 11, 2018

Participants: 4

Description:

This course introduces GIS concepts and ArcGIS tools used to visualize real-world features, discover patterns, and communicate information. Using ArcMap and ArcGIS Online, particpants work with GIS maps, explore data, and analyze maps and data as they learn fundamental concepts that underlie GIS technology.

ArcGIS Platform Implementation Caribbean Fisheries Management Council Task 6: Technology Transfer and Trainings Report

Course: ArcGIS Desktop 2

Complete Course Title: ArcGIS Pro: Essential Workflows

Duration: 3 Days

Date: September 12, 2018 – September 14, 2018

Participants: 4

Description:

This course extends foundational GIS knowledge and explores some of the most common GIS workflows using the ArcGIS Pro application. The course introduces techniques and general best practices to map, manage, analyze, and share data and other GIS resources. Hands-on exercises will give participants the experience needed to efficiently work with ArcGIS Pro.



ArcGIS Platform Implementation in the Caribbean Fishery Management Council.

Task 9: ArcGIS for Server Basic Installation and Deployment

September 25th, 2018

Prepared for: Graciela García Moliner FMP and Habitat Specialist Caribbean Fisheries and Management Council

Prepared by: Geographic Mapping Technologies, Corp. 54 Calle Mayagüez San Juan, Puerto Rico 00917 Teléfonos: 787-250-8182/ 787-250-8185

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3.	Us	er accounts and passwords	43

Document Control

VERSION	DELIVERY DATE	DESCRIPTION
1.0	September 25th, 2018	First version of the ArcGIS Platform installation and Configuration documentation.

1. Introduction

The following document summarizes Task 9: ArcGIS for Server Basic Installation and Deployment of the CFMC GIS Project: **Development of GIS access to coral and mesophotic reef data from Puerto Rico and the USVI, including commercial landings data**. This document describes the installation and configuration process of all ArcGIS Platform components (ArcGIS License Manager, ArcGIS Desktop-ArcMap, ArcGIS Pro and ArcGIS Sever) installed in the infrastructure of the Caribbean Fishery Management Council (CFMC), specifically on machine DESKTOP-3TRDRBG. The installation and configuration was completed on August 2nd, 2018.

2. ArcGIS Platform Components

The components described below were installed in computer assigned by CFMC named DESKTOP-3TRDRBG.

- ArcGIS License Manager
- ArcGIS Desktop 10.6.1
- ArcGIS Background Geoprocesing 10.6.1
- ArcGIS Licence Manager 10.6.1
- ArcGIS PRO 2.2.1
- ArcGIS for Server 10.6.1

2.1. ArcGIS License Manager 10.6.1 Installation and Configuration

The License Manager is manages licenses for all concurrent ArcGIS Desktop clients. The installation process for the license manager and the license authorization in ArcGIS Desktop is described below:

Step 1. Double click on the installation file and then press Next.



Step 2. Accept the master license agreement and press Next.



Step 3. Press Next.

RrcGIS License	Manager 2018.0 Setup	1		×
Destination Fold	er where the application will l	be installed.		
C:\Pr	ll ArcGIS License Manager rogram Files (x86)\ArcGIS\	2018.0 to: LicenseManager\		Change
		< Back	Next >	Cancel

Step 4. Press Install.

ArcGIS License Manager 2018.0 Setup ×
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
< Back Install Cancel

ArcGIS Platform Implementation	
Caribbean Fisheries Management Council	
Task 9: ArcGIS for Server Installation and Deployment	

Step 5. Let the installation run.

🛃 ArcGIS Li	cense Manager 2018.0 Setu	o	-	_		\times
Installing /	ArcGIS License Manager 201	8.0				
The prog	ram features you selected are b	eing installed.				
1 7	Please wait while ArcGIS Licer several minutes.	nse Manager 2018.0	installs. This m	ay take		
	Status:					
	-					
		< Back	Next >		Cance	I

Step 6. Once completed, press Finish.

🖟 ArcGIS Licen	ise Manager 2018.0 Setup	\times
	ArcGIS License Manager 2018.0 has been successfully installed.	
	Click the Finish button to exit this installation.	
	< Back Finish Cancel	

Step 7. The next consists in software authorization. The license server was identified through the License Manager as localhost, since it is the same computer that provides the licensing.

Software authorization process:

Software Authorization Wizard			×
Authorization Options You must authorize the license server prior	to use. Select from th	e options below.	
Authorization Options			
I need to authorize licenses on my license	server.		
O I have already authorized core licenses ar	nd need to authorize a	additional extensions.	
O I have received an authorization file and a process.	m now ready to finish	the authorization	
		Browse	
Product to be Authorized			
ArcGIS Desktop			
O ArcGIS Pro			
O ArcGIS Engine			
O Esri CityEngine			
	< Back	Next > Ca	ancel

Software Authorization Wizard	\times
Authorization Method Select the method you want to use to authorize the software.	
Authorize with Esri now using the Internet. (This automatic method is the easiest way to authorize. It requires an Internet connection.)	
O Authorize at Esri's website or by email to receive your authorization file.	
○ Authorize your software from a local license server.	
< Back Next > Cancel	

*First Name:	Graciela
*Last Name:	Garcia Moliner
*Organization:	CFMC
Department:	
*Address 1:	270 Muñoz Rivera Ave. Suite 401
Address 2:	
*City:	San Juan
*State/Province:	Puerto Rico
*Zip/Postal Code:	00918
*Location:	Puerto Rico \checkmark
*Phone Number:	(787) 766-5926
*Email:	graciela.garcia-moliner@noaa.gov
Comment:	
	Optional user-defined authorization description.

× ArcGIS Administrator RrcGIS (DESKTOP-3TRDRBG) ArcGIS Configuration Information: 😑 🛄 Desktop availability DESKTOP Borrow/Return Installation Information Support Operations Product Name: ArcGIS Desktop 10.6.1 Data Licenses Release Version: 10.6.1 Product Version: 10.6.1.9270 Installation Folder: C:\Program Files (x86)\ArcGIS\Desktop10.6\ Installed By: Graciela Install Date: 8/2/2018 Install Time: 13:37:57 Install Image: C:\Users\Graciela\Documents\ArcGIS 10.6.1\Desktop\Seti Current User: Graciela Application Data Folder: C:\Users\Graciela\AppData\Roaming System Temporary Folder: C:\Users\Graciela\AppData\Local\Temp\ Service Pack Information ArcGIS Service Pack: 0 (build 0) License Manager Environment Variable Information ARCGIS_LICENSE_FILE: N/A LM_LICENSE_FILE: N/A < > Machine IDs... Advanced... Help OK Cancel Apply

2.2. ArcGIS Desktop - ArcMap

Step 1. Select the installation file to begin the installation process of the ArcGIS Desktop applications (ArcMap, ArcCatalog). To start the installation double click on the installation file.


Step 2. Accept the licensing agreement and click Next.

🖟 ArcGIS Desk	top 10.6.1 Setup X
	Welcome to the ArcGIS Desktop 10.6.1 Setup program
	It is strongly recommended that you exit all Windows programs before running this setup program.
	Click Cancel to quit setup and close any programs you have running. Click Next to continue the installation.
	WARNING: This program is protected by copyright law and international treaties.
	Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Help	< Back Next > Cancel



Step 3. In the option Select Installation Type, select Complete and then press Next. Keep the default installation options.

RrcGIS Desktor	p 10.6.1 Setup ×
Select Installation	ed installation type.
Please select a	setup type.
	All application features, including ArcGIS Desktop 10.6.1 extensions, will be installed.
Custom	Use this option to choose which application features you want installed and where they will be installed. Recommended for advanced users.
	< Back Next > Cancel



folder where Python will be installed. .14, Numerical Python (NumPy) 1.9.3 and Matplotlib 1.5.2 are required to support certa rocessing tools. It is recommended that they be installed by the ArcGIS Desktop 10.6.1 will install Python 2.7.14, Numerical Python (NumPy) 1.9.3 and Matplotlib 1.5.2 in the older. To install into a different folder, click Change and select another folder. older hon27\ Change installation directory should not contain spaces. Python 2.7.14, Numerical Python .9.3 and Matplotlib 1.5.2 will need 365 MB of additional disk space to install.	ython Destination Folder	
.14, Numerical Python (NumPy) 1.9.3 and Matplotlib 1.5.2 are required to support cert: rocessing tools. It is recommended that they be installed by the ArcGIS Desktop 10.6.1 will install Python 2.7.14, Numerical Python (NumPy) 1.9.3 and Matplotlib 1.5.2 in the older. To install into a different folder, click Change and select another folder. older hon27\ Change 1 installation directory should not contain spaces. Python 2.7.14, Numerical Python .9.3 and Matplotlib 1.5.2 will need 365 MB of additional disk space to install.	Select a folder where Python w	vill be installed.
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older hon27\ Change installation directory should not contain spaces. Python 2.7.14, Numerical Python .9.3 and Matplotlib 1.5.2 will need 365 MB of additional disk space to install.		
hon27\ Change n installation directory should not contain spaces. Python 2.7.14, Numerical Python .9.3 and Matplotlib 1.5.2 will need 365 MB of additional disk space to install.	he setup will install Python 2.7.: Mowing folder. To install into a	14, Numerical Python (NumPy) 1.9.3 and Matplotlib 1.5.2 in the different folder, click Change and select another folder.
n installation directory should not contain spaces. Python 2.7.14, Numerical Python .9.3 and Matplotlib 1.5.2 will need 365 MB of additional disk space to install.	he setup will install Python 2.7.: Illowing folder. To install into a Python Folder	14, Numerical Python (NumPy) 1.9.3 and Matplotlib 1.5.2 in the different folder, click Change and select another folder.
	he setup will install Python 2.7.: ollowing folder. To install into a Python Folder C:\Python27\	14, Numerical Python (NumPy) 1.9.3 and Matplotlib 1.5.2 in the offferent folder, click Change and select another folder. Change
	he setup will install Python 2.7.1 ollowing folder. To install into a Python Folder C:\Python27\ he Python installation directory	14, Numerical Python (NumPy) 1.9.3 and Matplotlib 1.5. different folder, click Change and select another folder Change should not contain spaces. Python 2.7.14, Numerical Pyt

Step 4. Press Install. Let the installation run and finalize by selecting Finish.

RecGIS Desktop 10.6.1 Setup
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
Would you like to anonymously participate in the design of future versions of ArcGIS?
Click here to participate in the Esri User Experience Improvement program. (Recommended)
Learn more about Esri User Experience Improvement
< Back Install Cancel



2.3. ArcGIS Desktop Background Geoprocessing

ArcGIS Desktop is built for 32 bits OS environments, but the "Background Geoprocessing" application, allows to use resources of the 64 bits operating systems when executing the geoprocessing tools. The use of 64-bit processing to perform analysis on systems with large amounts of RAM, can help to manage large amounts of data that otherwise could not be processed in a 32-bit environment. Since the execution is done in the native 64-bit environments, more hardware resources can be used.

Step 5. Select the installation file and then press "double click" the file to begin the installation process.

> Aplicaciones > ESRI > 10.6.1 > ArcGIS Desktop 10.6.1

Name	×	Date modif
ArcGIS_Data_Interop_for_Desktop_1061_163752.exe		8/1/2018 10
ArcGIS_Data_Reviewer_for_Desktop_1061_163753.exe		8/1/2018 10
ArcGIS_Desktop_1061_163864.exe		8/1/2018 10
ArcGIS_Desktop_BackgroundGP_1061_163876.exe		8/1/2018 10
ArcGIS_License_Manager_Windows_2018_0_163304.exe		8/1/2018 10
ArcGIS_Workflow_Manager_for_Desktop_1061_163759.exe		8/1/2018 10
🜍 Database_Server_Desktop_1061_163887.exe		8/1/2018 10
Microsoft_ODBC_Driver_17_SQL_Server_32bit_164451.exe		8/1/2018 10

Step 6. To begin the installation process, double click the installation file. Accept the licensing agreement and click Next.







RecGIS Desktop Background Geoprocessing 10.6.1 (64-bit) Setup	×
Python Destination Folder	
Select a folder where Python will be installed.	
Python 2.7.14, Numerical Python (NumPy) 1.9.3 and Matplotlib 1.5.2 are required to support core Geoprocessing tools. It is recommended that they be installed by the ArcGIS Desktop B Geoprocessing 10.6.1 (64-bit) setup.	certain ackground
The setup will install 64-bit versions of Python 2.7.14, Numerical Python (NumPy) 1.9.3 and N 1.5.2 in the following folder. To install into a different folder, click Change and select another	4atplotlib r folder.
Python Folder	
C:\Python27\ Change	
The Python installation directory should not contain spaces. Python 2.7.14, Numerical Python 1.9.3 and Matplotlib 1.5.2 will need 615 MB of additional disk space to install.	(NumPy)
< Back Next > Can	cel
🛃 ArcGIS Desktop Background Geoprocessing 10.6.1 (64-bit) Se 🦳 🗌	×
Installing ArcGIS Desktop Background Geoprocessing 10.6.1 (64-bit)	

The prog	ram features you selected are being installed.
P	Please wait while ArcGIS Desktop Background Geoprocessing 10.6.1 (64-bit) installs. This may take several minutes.
	Status: Copying new files
	File: C:\Program Files (x86)\ArcGIS\Desktop10.6\bin64\CIM.dll
	< Back Next > Cancel

Step 8. After the installation process is completed, click Finish.



2.4. ArcGIS Pro 2.2.1 Installation

ArcGIS Pro is the essential application for creating and working with spatial data on desktop. It provides tools to visualize, analyze, compile, and share data. Projects in ArcGIS Pro can incorporate content from an organization's portal or ArcGIS Online. This section describes the installation process of ArcGIS Pro.

Step 1. Select the installation file to install the ArcGIS Pro application. To begin the installation process, "double click" on the file.

> Aplicaciones > ESRI > ArcGIS Pro > ArcGIS Pro 2.2	
Name	Date modified
ArcGIS_Data_Interop_Ext_for_Pro_22_163827.exe	7/3/2018 8:41 AM
ArcGISPro_22_163783.exe	7/3/2018 8:40 AM
ArcGISProHelp_22_163820.exe	7/3/2018 8:29 AM



🛃 ArcGIS Pro Se	xtup ×
	Welcome to the ArcGIS Pro Setup program
	It is strongly recommended that you exit all Windows programs before running this setup program.
	Click Cancel to quit setup and close any programs you have running. Click Next to continue the installation.
	WARNING: This program is protected by copyright law and international treaties.
	Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
	< Back Next > Cancel

\times
^
~

Step 3. In the Installation Context window select Anyone who uses this computer (all users) option and then click Next. Keep the default options and then click "Next".

🖟 ArcGIS Pro Setup				×
Installation Context Install this applicatio	n for:			
Anyon Only fo	e who uses this comp or me (Graciela)	outer (all users)		
* ArcCIS Pro Setup		< Back	Next >	Cancel
Destination Folder Select a folder where	e the application will	be installed.		
Install Arc C:\Program	GIS Pro to: m Files\ArcGIS\Pro\			Change
		< Back	Next >	Cancel

Step 4. In the window with the option Ready to Install the Program, click Next. After the installation process is completed, click Finish.

đ	ArcGIS Pro Setup	×			
	Ready to Install the Program The wizard is ready to begin installation.				
S					
a	If you want to review or change any of your installation settings, click Back. Click Cancel to ex the wizard.	dt			
	Would you like to anonymously participate in the design of future versions of ArcGIS?				
7	(Recommended)				
L					
	< Back	el			



The ArcGIS Pro licensing is managed by the CFMC organizational account (https://cfmc.maps.arcgis.com). This type of license is called "Named user license", so it is necessary to assign privileges to the user cfmc_pr so that this user can use the ArcGIS Pro application.

Step 5. Sign in to the CFMC organizational account (https://cfmc.maps.arcgis.com) In order to assign the ArcGIS Pro license to the cfmc_pr userselect the the "Organization" > "Licenses" tab.

i cfmc.maps.arcgis.cc	om/home/organization.html#lic	enses				□ ☆
Google						
Home Gallery Map Scer	ne Groups Content Organ	ization			Graciela 🗸 🔍	
Caribbean Fi	ishery Manage	ment Council				
Overview Members	Licenses Status Settings	5				Help
Disable offline usage of A	ArcGIS Pro					
Product			ArcGIS Pro Standard			
Licenses			1 0			
Available						
Members Select All		Search by Name	▼ Filter by level: ● Ar	Q y○1○2	Selected Members	
Click to select a member.					Click to remove a se	elected member.
▲ Name	Username	Level Licensed for	Last Used		Name U	sername Level
Graciela Garcia-Moliner	cfmc_pr	2 Pro Standard			Graciela Garcia-	stmc_pr (2)

2.5. ArcGIS Server 10.6.1 Installation and Configuration

ArcGIS technology makes geographic information available to others in the organization and optionally anyone with an internet connection. This is accomplished through web services, which allow a powerful server computer to receive and process requests for information sent by other devices. ArcGIS Server opens GIS GIS to tablets, smartphones, laptops, desktop workstations, and any other devices that can connect to web services.

This section describes the installation process of ArcGIS Server 10.6.1 components on Graciela Moliner's computer (**DESKTOP-3TRDRBG**).

Arcob_rcense_manager_rmux_zoro_o_roboro.rangz	0/1/2010 12:41 FIVE	WILLIAM DICHIVE
ArcGIS_License_Manager_Windows_2018_0_163304.exe	8/1/2018 12:39 PM	Application
ArcGIS_Monitor_1061_164029.exe	8/1/2018 12:42 PM	Application
ArcGIS_Server_Windows_1061_163968.exe	8/1/2018 11:29 AM	Application
ArcGIS_Workflow_Manager_for_Server_1061_164020.exe	8/1/2018 10:43 AM	Application
CloudBuilder-10-6-1.application	8/1/2018 12:38 PM	Application Manif
Database Server Workgroup 1061 164004 eve	8/1/2018 10·42 ΔM	Application

Step 1. Double click on the installation file an then click Next.



O ArcGIS Server		×
	Installation files have been successfully extracted to your computer.	
	☑ Launch the setup program.	
	< Back Close	

🖟 ArcGIS Server 1	0.6.1 Setup ×
	Welcome to the ArcGIS Server 10.6.1 Setup program
	It is strongly recommended that you exit all Windows programs before running this setup program.
	Click Cancel to quit setup and close any programs you have running. Click Next to continue the installation.
	WARNING: This program is protected by copyright law and international treaties.
	Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Help	< Back Next > Cancel



🕼 ArcGIS Server 10.6.1 Setup	×
Master Agreement	
You must agree with the master agreement below to proceed.	
Master Agreement (E204CW) Revised 3/30/2018 IMPORTANT-READ CAREFULLY	^
Unless superseded by a signed license agreement between you and Esri, Esri is willing to provide Esri Offerings and Services to you only you accept all terms and conditions contained in this Agreement as t sole and final agreement of the parties regarding your acquisition of these Esri Offerings and Services. Please read the terms and conditi- carefully. You may not use the Esri Offerings until you have agreed t	rif he ons o ∽
I accept the master agreement Pr	int
\bigcirc I do not accept the master agreement	
Agreement PDFs (all languages) < Back Next > Ca	ncel

Step 3. In the "Select Features" window, keep the default options an click Next.

RrcGIS Server 10.6.1 Setup	×
Select Features	
Please select which features you would like to in:	stall.
Click on an icon in the list below to change how a f	eature is installed.
	Feature Description
NET Extension Support	The GIS Server hosts GIS Services that are accessible through REST and SOAP. The GIS Server is administered using Manager and browsed using the Services Directory.
	This feature requires 3112MB on your hard drive. It has 1 of 1 subfeatures selected. The subfeatures require 2665MB on your hard drive.
Install to:	
C:\Program Files\ArcGIS\Server\	Change
Space	< Back Next > Cancel

Step 4. During the installation process, a user account is created leaving the default name "arcgis" with password "arcgis". This user account is not a domain user and is used to access the operating system resources. The password must not be modified.

况 ArcGIS	Server 10.6.1 Setup		×
Specify A	arcGIS Server Account		
Specify	the account that the ArcGIS Serv	ver processes will run as.	
۲	Specify the account name and p	password:	
	ArcGIS Server Account:	arcgis	
	Password:	•••••	
	Confirm password:	•••••	
0	I have a configuration file with the previous run of this setup.	the account information generated by a	
	Filename:	Brov	/se
		< Back Next > Ca	ncel

Step 5. The configuration file was not saved, it was not necessary at this time.

🕼 ArcGIS Server 10.6.1 Setup			×
Export server configuration file			
Export server configuration file			
Exporting a server config file helps you with configuration. It will create the user accoun based on this configuration file.	installing multiple s it, and grant it the n	ystems that use the lecessary privileges o	same server on the system
O Export configuration file. This file sho	ould be placed in a	properly secured dire	ectory.
Filename:			Browse
	< Back	Next >	Cancel

Step 6. Click Install and at the end of the installation process click Finish.

🛃 ArcGIS Server 10.6.1 Setup		×
Ready to Install the Program		
The wizard is ready to begin installation	۱.	
Click Install to begin the installation.		
If you want to review or change any of the wizard.	your installation settings, click Back. Click (Cancel to exit
	< Back Install	Cancel
Recursive ArcGIS Server 10.6.1 Setup		×
ArcGIS So	erver 10.6.1 has been succes	sfully
instancu.		
Click the Finis	h button to exit this installation.	

Step 7. After the installation finished, ArcGIS for Server was authorized using the option I have installed my software and need to authorize it.

Software Auth	orization Wizard						×
Authorizatio You mus	on Options t authorize the soft	ware prior to u	se. Select from	the options	below.		
Authorizatio	n Options						
I have i	nstalled my softwar	e and need to	authorize it.				
O I have a	iready authorized t eceived an authori	ne sottware ar zation file and	am now ready	to finish the	authorizatio	ons. n	
					Browse.		
			(Deal	N		Canaal	
			S DOCK	INC	AL /	Cancel	

Software Authorization Wizard	×
Authorization Method Select the method you want to use to authorize the software.	
 Authorize with Esri now using the Internet. (This automatic method is the easiest way to authorize. It requires an Internet conner 	ction.)
○ Authorize at Esri's website or by email to receive your authorization file.	
< Back Next > 0	Cancel

'First Name:	Graciela
*Last Name:	Garcia Moliner
"Organization:	CFMC
Department:	1
"Address 1:	270 Muñoz Rivera Ave. Suite 401
Address 2:	
'City:	San Juan
State/Province:	Puerto Rico
"Zip/Postal Code:	00918
*Location:	Puerto Rico 🗸
Phone Number:	(787) 766-5926
*Email:	graciela.garcia-moliner@noaa.gov
Comment:	
	Optional user-defined authorization description.

Authorization informatio	on (continued)
We will use the followin the software. (* required	g information to verify our records and authorize your use of tield)
*Your Organization:	U.S. Federal Government/Tribes
*Your Industry:	Fisheries & Wildlife
*Yourself:	Analyst/Researcher/Specialist
The personal information	n you supplied is protected under Esri's privacy policy. If you want
to view Esri's privacy po	licy, click the View button below.
View	

Step 9. In the "Authorize Software Extensions" window, the option "I do not want to authorize any extensions at this time" was selected. At the end of the authorization process, the "Finish" option was selected.

 I do not want to authorize any external 	nsions at this time.
O I have authorization number(s) to a	uthorize one or more extensions.
Extensions	
Feature	Authorization Number
Network Server	
Data Interoperability Server	
Business Server	
Workflow Manager Server	
Data Reviewer Server	
Production Mapping Server	
Defense Mapping Server	
Maritime Charting Server	
Maritime Bathymetry Server	
Aviation Charting Server	
Aviation Airports Server	

Software Authorization		×
Authorizing Software		
\checkmark	Connecting	
\checkmark	Sending authorization information	
\checkmark	Receiving authorization file	
\checkmark	Authorizing software	
Congratulations, y	rour software has been authorized and is now ready for use.	
	< Back Finish Cano	el

Step 10. After the ArcGIS for Server authorization is completed, an internet browser window opens automatically to create and configure the "New Site" or join an existing one. The "Create New Site" option is selected, to begin the site creation process.

G Are	GIS Server Manager			
	ArcGIS Se	erver Setup Wizard	rGIS Sarver site. You can either	Help .
	new site or	join an existing site.	Existing Site	

Step 11. For the ArcGIS Server administration account the "**siteadmin**" name was created.

	Sectificate error, https://legalherti6442/are	nic/manager/
0 60	Certificate error https://localnost:6443/arc	gis/manager/
) - gracie G G	ioogle	
	ArcGIS Server	Manager
		Help
		Primary Site Administrator Account
		Create the account that will be the primary administrator for this ArcGIS Server site. This is a new account that is stored with the site and is not an operating system account. You will
		use this account when logging in to Manager.
		lisernamer eitenderin
		siteautiin
		Password:
		Confirm Password:
		Back

Step 12. The partition Disk C: \ was specified as the container for the ArcGIS for Server directories.

ArcGIS Se	ver Manager
	Help Specify Root Server Directory and Configuration Store When you create an ArcGIS Server site, several directories are installed to store output images, geoprocessing job results, cached images, and more. You can choose this location, but it must be accessible from each machine in your site. Root Server Directory: C:\arcgisserver\directories
	The config store holds information about the GIS server's machines, services, and directories. You can choose the location of the config store, but it must be accessible from each machine in your site.
	Configuration Store: C:\arcgisserver\config-store
	Back

Step 13. Click Finish.

Configuration Summ		Help
configuration summ	iai y	
Your ArcGIS Server instal	llation is ready to be completed.	
Username:	siteadmin	
Root Server Directory:	C:\arcgisserver\directories	
Configuration Store:	C:\arcgisserver\config-store	
Click Finish to create you	r ArcGIS Server site.	
		Back

Step 14. The installation of ArcGIS Server was verified.

In order to verify if the installation was done successfully and ArcGIS Server is working as expected it must be done through the ArcGIS Server Manager application. The ArcGIS Server installation process configures a service called **"SampleWorldCities".** This service helps verify that the installation of the software was successful.

	esri.com ArcGIS Enterprise
ArcGIS Server Manager	
Enter your ArcGIS Server username and	
password:	
Username: siteadmin	
Password: •••••	
Login	

In Manage Services, the SampleWorldCities Map service is selected.



3. User accounts and passwords

User	Password	Тіро
siteadmin	siteadmin	ArcGIS Server site administrator account
arcgis	arcgis	ArcGIS Server and OS account