

Education

Current Position

- **PhD Student in Ecology, Department of Environmental Biology, Sapienza University of Rome, Rome, Italy** **From November 2018**
Project: New insights on the ecology and conservation of Mediterranean sharks through the development of Citizen Science networks, with a particular attention to the Mediterranean Great White Shark. **Supervisors:** Giovanna Jona-Lasinio, Francesco Ferretti, Francesco Colloca

Academic Path

- **M.Sc in Marine and Natural Landscape Sciences (Curriculum – Marine Sciences), Sapienza University of Rome, Rome, Italy, grade 110/110 *summa cum laude*.** **2017**
Thesis: The Great White Shark (*Carcharodon carcharias*, Linnaeus, 1758) in the Mediterranean Sea: A Comprehensive Study. **Supervisors:** Giovanna Jona-Lasinio, Francesco Ferretti
- **Visiting Student within the ERASMUS Programme, Universidad de Barcelona, Barcelona, Spain** **September 2010 – July 2011**
- **B.Sc in Natural Sciences, Sapienza University of Rome, Rome, Italy, grade 108/110** **2013**
Thesis: The Great White Shark, *Carcharodon carcharias* (Linnaeus, 1758), in the Mediterranean Sea: Population Dynamics and Conservation. **Supervisor:** Marina Cobolli

Other Courses & Workshops

- **Software Carpentry Lab (Bash Shell, Git and Python), Carpentries Italia** **March 2021**
Training course to learn the principal bases of programming in Unix and Python and acquiring the rudiments of Git version control use.
- **II Workshop sugli Elasmobranchi delle acque italiane. Tassonomia, identificazione e normative, Università degli studi di Padova, WWF Italia,** **May 2019**
Workshop dedicated to sharks' species inhabiting the Italian waters focusing on identification, taxonomy and the regulations in force. **Advisors:** Carlotta Mazzoldi, Fabrizio Serena, Giulia Prato
- **Software Carpentry Workshop (Reproducible science with R, RStudio, and GitHub), MBARI – Monterey Bay Aquarium Research Institute** **November 2017**
Training course to learn the principal bases of data analysis in R through the IDE RStudio and collaborating via GitHub repositories.
- **Marine Ecology Lab, Sapienza University of Rome** **June 2015**
Fieldwork activity conducted around the Costa Concordia wreck site. During the workshop had been realized 8 scientific dives in order to acquire the principal underwater sampling methods, such as: visual census, transects, stratified random sampling. **Advisors:** Giandomenico Aridizzone, Edoardo Casoli, Daniele Ventura
- **Diploma at Scuola Romana di Fotografia (Roman School of Photography), Scuola Romana di Fotografia e Cinema** **September 2009 – July 2010**
One-year course fully exploring the basis of photography. The principal classes were Theory and Technics of Photography, Studio Portrait, Darkroom, Digital Post-production, Still Life, Geographic Photo Feature. At the end of the courses, a photographic Portfolio has been made up
- **Upper Intermediate Level, British Council Roma** **September 2009 – July 2010**
- **Intermediate Level, British Council Roma** **September 2008 – July 2009**

Professional Experience

Current Position

- **Research Fellow, Department of Integrated Marine Ecology (EMI), Stazione Zoologica Anton Dohrn** **From September 2020**
Supervisor: Francesco Colloca

Implementation of theoretical models to assess the criterion D3C1, D3C2, D3C3 of the Marine Strategy Framework Directive starting from historical series of scientific surveys and catch data. Assessing resilience and rebuilding capability of Mediterranean sharks' population on the basis of species' life-history traits. Developing Species Distribution Models for macroplanktonic jellyfish species to evaluate the probability of negative overlaps with human activities, in particular aquaculture, in the Mediterranean Sea.

Previous Positions

- **Research Fellow, Department of Statistical Sciences, Sapienza University of Rome** **February 2019 – January 2020**
Supervisors: Giovanna Jona-Lasinio, Francesco Ferretti

Species distribution models for Mediterranean shark species starting from opportunistic datasets. Integrated modeling approach to handle different data sources and investigation of possible proxies to control the observation effort related biases. High resolution abundance models to determine the white shark hotspot of presence inside the Mediterranean Sea.
- **Intern, MedReAct** **July 2018 – December 2018**
Supervisor: Domitilla Senni

Interview survey in several fish markets and coastal guard offices along the Italian coast to investigate shark species commercialization and the stakeholders' awareness of the current EU regulations. Internship funded with the Italian regional fellowships programme "Torno Subito 2017".
- **Intern, Dept. of Statistical Sciences, Sapienza University of Rome** **July 2018 – December 2018**
Supervisors: Giovanna Jona-Lasinio, Francesco Ferretti

Development of the sharkPulse platform. Maintenance of the sharkPulse Italia social-media pages. Improvement of the sharkPulse.org web page via the development of shiny apps for data display. Internship funded with the Italian regional fellowships programme "Torno Subito 2017".
- **Visiting Scholar, Block Lab, Hopkins Marine Station of Stanford University** **November 2017 – May 2018**
Supervisors: Francesco Ferretti, Barbara Block

Web-app creation and development, web site pages design to present and share the collected data. Integration, development and management of relational database. Implementation of statistical model in both Likelihood and Bayesian framework to assess shark species distribution and abundance. BRUVS calibration for visual analysis surveys. White shark photo ID and both satellite and acoustic tag deployment. Visiting period funded with the Italian regional fellowship programme "Torno Subito 2017".
- **Intern, Block Lab, Hopkins Marine Station of Stanford University** **May 2017 – July 2017**
Supervisor: Francesco Ferretti

Development of standardized framework to estimate Mediterranean white sharks' abundance trends starting from opportunistic data via the implementation of observation effort indices. Web-app creation and development.
- **Researcher/Technician, oceanographic vessel N/O "Minerva Uno", CoNISMa** **October 2015**
Supervisor: Francesco Latino Chiocci

Activity carried out during the oceanographic campaign "SAND 2015". High and low frequency seismic data collection (Sparker and Chirp), water chemistry data collection through multi-parametric probes, multi-beam data acquisition.
- **Intern, Ocean Research** **September 2014 – November 2014**
Supervisor: Enrico Gennari

Catch, tag and release of benthic sharks; telemetry tracking of white sharks, marine mammals tracking and monitoring; sampling of benthic communities living in the intertidal zone; benthic and little pelagic sharks' behavior in captivity (stress response, tonic state); white shark photo-identification. During the internship had been organized seminars and classes on: GIS, R, statistics, sharks' biology, bio-informatic in an evolutionary context.
- **Intern, Departamento de Recursos Marinos Renovables, Institut de Ciencies del Mar, ICM-CSIC** **March 2011 – July 2011**
Supervisors: M. Pilar Olivar, Balbina Moli

Internship developed in the framework of the IDEADOS Project. Identification of larvae, juveniles and adults of mesopelagic fishes; measurement of length for more common species; individualization of adult specimens with determination of length and weight; data entry and review of results

- **Intern, L'Aquarium de Barcelona**

April 2011 – July 2011

Keeping of various marine species, reptiles, amphibian, and penguins in captivity; feeding, medical treatment, reproduction, transfers, and adaptation; maintenance of tanks (cleaning, decoration, water quality)

Teaching Experience

- **Instructor** – *Introduction to Data Science*, University of Bari Aldo Moro
- **Teaching Assistant** – *Data visualization, data analytics, data modeling*, Advanced Professional Training Course in “Big data. Statistical methods for the knowledge society”, Dpt. of Statistical Sciences, Sapienza University of Rome
- **Teaching Assistant** – *Statistics* (1041626 – SECS-S/02), M.Sc in Ecobiology, Sapienza University of Rome

May 2021

July 2021; July 2020

**2021 – 2022;
2020 – 2021;
2019 – 2020;
2018 – 2019;
2017 – 2018;**

Supervising Experience

Master Students

Francesca Fabrizi (M.Sc in Ecobiology, Sapienza University of Rome, 2021 - Present), **Santiago Bellver Barreno** (M.Sc in Ecobiology, Sapienza University of Rome, 2020 - Present), **Mattia Palma** (M.Sc in Ecobiology, Sapienza University of Rome, 2020 – present), **Alessandro Frachea** (M.Sc in Ecobiology, Sapienza University of Rome, 2019-2020).

Skills and Competences

Languages: Italian (native), English (fluent), Spanish (upper-intermediate).

Computer: Excellent computer literacy. Able to work in DOS, Windows, Mac OS X, and Unix/Linux operating systems. Knowledge of the whole suite of Microsoft Office programs. Able to program with different statistical (R, INLA, JAGS, Stan), geographic data processing (Generic Mapping Tools, ArcGIS, QGIS, Google Earth Engine), database management (SQL within MySQL, PostgreSQL and MS Access), editing (LATEX, RMarkdown), version control systems (git), web site compiling (HTML, CSS, PHP, WordPress, Markdown), web-app developing (Shiny), and general-purpose programming languages (Bash, Python). Advanced knowledge of the Adobe Creative Cloud Program Suite (Photoshop, Bridge, Illustrator, Premiere, Lightroom).

Technical: Broad experience in data science and spatial analysis. Proficient in statistical modeling both in maximum likelihood and Bayesian frameworks. Able to compile, manipulate, integrate and analyze large datasets. Proficient in SDM (Species Distribution Models) for large pelagic marine species in particular in the case of presence-only data. Able to estimate abundance and distribution patterns of marine animal populations from data scattered in space and time. Experience in integrated modeling to pipe and harmonize different data sources. Extensive experience in analyzing unbalanced datasets with a substantial portion of missing information, over-dispersed data, and cases of zero inflation. Experience with BRUVs (Baited Remote Underwater Video System) in terms of development, calibration, and footage analysis. Experience with fieldwork activities aiming at investigating marine megafauna movements (pop-up and spot tags deployment, acoustic tags for both active and passive animal telemetry tracking), and population dynamics via mark-recapture analysis (spaghetti tag).

Publications

JOURNAL ARTICLES

- BARGNESI F., **MORO S.**, LEONE A., GIOVOS I., FERRETTI, F. (2022), “New technologies can support data collection on endangered shark species in the Mediterranean Sea”, *Marine Ecology Progress Series*, accepted
- MARTINO. S, PACE DS., **MORO S.**, CASOLI E., VENTURA D., FRACHEA A., SILVESTRI M., ARCANGELI A., GIACOMINI G., ARDIZZONE G. JONA-LASINIO G. (2021) “Integration of presence-only data from several sources. A case study on dolphins’ spatial distribution”, *Ecography*, 44: 1533-1543. <https://doi.org/10.1111/ecog.05843>
- SERENA F., ABELLA AJ., BARGNESI F., BARONE M., COLLOCA F., FERRETTI F., FIORENTINO F., JENRETTE J., **MORO S.** (2020), “Species diversity, taxonomy and distribution of Chondrichthyes in the Mediterranean and Black Sea”, *The European Zoological Journal*, 2020, 1-40
- MANCUSI C., BAINO R., FORTUNA C., DE SOLA L., MOREY G., BRADAI M., KALLIANOTIS A., SOLDI A., HEMIDA F., SAAD A., DIMECH M., PERISTERAKI P., BARICHE M., CLO S., DE SABATA E., CASTELLANO L., GARIBALDI F., LANTERI L., TINTI F., PAIS A., SPERONE E., MICARELLI P., POISSON F., SION L., CARLUCCI R., CEBRIAN-MENCHERO D., SÉRET B., FERRETTI F., EL-FAR A., SAYGU İ., SHAKMAN E., BARTOLI A., GUALLART J., DAMALAS D., MEGALOFONOU P., VACCHI M., BOTTARO M., NOTARBARTOLO DI SCIARA G., FOLLESA M., CANNAS R., KABASAKAL H., ZAVA

B., CAVLAN G., JUNG A., ABUDAYA M., KOLITARI J., BARASH A., JOKSIMOVIC A., MARCETA B., GONZALES VILAS L., TIRALONGO F., GIOVOS I., BARGNESI F., LELLI S., BARONE M., **MORO S.**, MAZZOLDI C., CHARIS C., ABELLA A., SERENA F. (2020), "MEDLEM database, a data collection on large elasmobranchs in the Mediterranean and Black seas", *Mediterranean Marine Science* 21(2), 276-288.

- **MORO S.**, JONA-LASINIO G., BLOCK B., MICHELI F., DE LEO G., SERENA F., BOTTARO M., SCACCO U., FERRETTI F. (2019), "Abundance and distribution of the white shark in the Mediterranean Sea", *Fish and Fisheries*, 21(2), 338-349.

CONFERENCE TALKS

- FERRETTI F., CHAPPLE T., GALLAGHER A., GAMBARDILLA C., JENRETTE J., **MORO S.**, SCHALLERT R., SHEA B. (2021), "Chasing white sharks in the Mediterranean Sea", GLEX 2021 – The Explorers Club's Global Exploration Summit, 6 -10 July 2021, Lisbon - Azores, Portugal
- **MORO S.**, JONA-LASINIO G., BLOCK B., MICHELI F., DE LEO G., SERENA F., BOTTARO M., SCACCO U., FERRETTI F. (2019), "Abundance and distribution of the white shark in the Mediterranean Sea", EEA 2019 - European Elasmobranch Association 23th Annual Conference, 16-18 October 2019, Rende, Italy.
- BARNESI F., **MORO S.**, LEONE A., FERRETTI F. (2019), "A world platform to support data collection on endangered species in the Mediterranean Sea", EEA 2019 - European Elasmobranch Association 23th Annual Conference, 16-18 October 2019, Rende, Italy
- FERRETTI F., LIU Z. Y. C., BARGNESI F., **MORO S.**, BUTNER C., HADDOCK S., HASTIE T., JORGENSEN S., MICHELI F. (2019), "sharkPulse: taking the pulse of global shark populations", EEA 2019 - European Elasmobranch Association 23th Annual Conference, 16-18 October 2019, Rende, Italy
- BARGNESI F., CERRANO C., SERENA F., GRIDELLI S., **MORO S.** AND FERRETTI F. (2018), "New opportunities from citizen science for conservation assessments of the Mediterranean shark populations", 53rd European Marine Biology Symposium, 17 – 21 September 2018, Ostende, Belgium.
- BARGNESI F., GRIDELLI S., **MORO S.** AND FERRETTI F. (2018) "A new global platform for collecting data on sharks for conservation assessments in the Mediterranean Sea", 1st International Scuba Diving Sustainability Workshop, 19 – 21 October 2018, Genova, Italy.

POSTERS

- PANUNZI G., CARUSO G., MINGIONE M., ALAIMO DI LORO P., **MORO S.**, BOMPIANI E., LANFREDI C., PACE DS, TARDELLA L., JONA-LASINIO G., (2021), "Model-based clustering for monitoring cetaceans population dynamics", GRASPA 2021, 7-9 June 2021, Rome, Italy
- ALAIMO DI LORO, P. BOMPIANI E., CARUSO G., JONA-LASINIO G., LANFREDI C., MINGIONE M., **MORO S.**, LANFREDI C., PACE DS, TARDELLA L., JONA-LASINIO G., (2021), "Model-based clustering for monitoring cetaceans population dynamics", GRASPA 2021, 7-9 June 2021, Rome, Italy
- **MORO S.**, PALMA M., JONA-LASINIO G., COLLOCA F., GAMBARDILLA G., FERRETTI F. (2021), "Using high-resolution density models to predict white sharks' hot spots in the Mediterranean Sea", GRASPA 2021, 7-9 June 2021, Rome, Italy
- FRACHEA A., ARCANGELI A., GIACOMINI G., SILVESTRI M., CRISCIOLI A., FERRI S., DI MARCO C., MARINI S., CAMPANA I., PARABOSCHI M., PELLEGRINO G., ALESSI J., CAFARO V., ANGELETTI D., PAVAN G., PAPALE E., JONA-LASINIO G., **MORO S.**, ARDIZZONE G., PACE DS. (2019), "Modeling bottlenose and striped dolphins' distribution in relation to their prey's biomass in the Mediterranean Sea", WMMC'19 – World Marine Mammal Conference, 9-12 December 2019, Barcelona, Spain
- **MORO S.**, JONA-LASINIO G., COLLOCA F., MASTRANTONIO G., SERENA F., BARGNESI F., FERRETTI F. (2019), "Analyzing opportunistic sightings with point processes models: the Mediterranean white shark as a case study" in Poster Session, EEA 2019 - European Elasmobranch Association 23th Annual Conference, 16-18 Ottobre 2019, Rende, Italia
- BARGNESI F., GENNARI E., AHLERS J., **MORO S.**, FERRETTI F., (2019), "Ecoinformatic and citizen science to boost shark research in South Africa", in Poster Session, 5th Southern African Sharks & Rays Symposium, 7-9 Ottobre 2019, Cape Town, Sud Africa.

Projects

- WSC – White Shark Case (PI: Ferretti F.) 2021 - Present
- MSFD – Marine Strategy Framework Directive: Working Group for indicators D1/D3 (PI: Colloca F.) 2021 - Present

- FEAMP Campania (PI: Colloca F.) 2020
- JCDM - Joint Cetacean Database and Mapping (PI: Jona-Lasinio G.) 2020 – Present
- sharkPulse (PI: Ferretti F.) 2017 – Present
- MESS – Mediterranean Sharks Survey (PI: Moro S., Advisors: Ferretti F., Jona-Lasinio G.) 2017
- Shark Baseline Project (PI: Ferretti F.) 2016 - 2017
- IDEADOS Project (PI: Pilar-Oliver M.) 2011

Awards and Grants

- Torno Subito 2017. Research Grant issued by Regione Lazio to support the MESS (Mediterranean Sharks Survey) Project. The project was funded with 13,528.20 € for a period of 12 months. 2017

Service To Profession

Referee for the following peer-reviewed journal:

- Frontiers in Marine Science, 2021 (1 manuscript)
- Mediterranean Marine Science, 2021 (1 manuscript), 2022 (1 manuscript)
- Annales, Series Historia Naturalis, 2020 (1 manuscript), 2021 (1 manuscript)
- FishTaxa, 2020 (1 manuscript)

References

Francesco Ferretti, Assistant Professor, Dept. of Fish and Wildlife Conservation, Virginia Tech University, Blacksburg, USA, email: ferretti@vt.edu, web: <https://fishwild.vt.edu/faculty/ferretti.html>

Giovanna Jona-Lasinio, Full Professor, Dept. of Statistical Sciences, Sapienza University of Rome, Rome, Italy, email: giovanna.jonalasinio@uniroma1.it, web: <https://www.dss.uniroma1.it/it/dipartimento/persona/jona-lasinio-giovanna>

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