



UFAL



The Scientific Expedition in São Francisco River: a model for integration between science, society and sustainable development



RELATÓRIOS PARCIAIS E RESUMOS DAS ATIVIDADES DE PESQUISAS REALIZADAS DURANTE A 4ª EXPEDIÇÃO CIENTÍFICA DO BSF – 2021



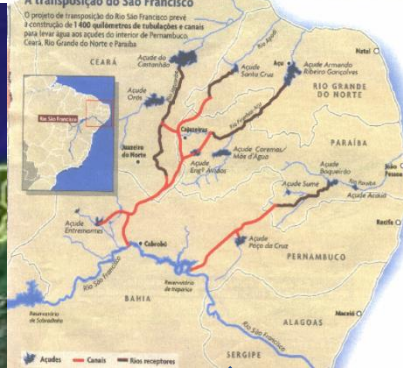
Organizadores:

EMERSON CARLOS SOARES
JOSÉ VIEIRA SILVA
THEMIS DE JESUS DA SILVA


Emerson Soares- Ph.D
José Vieira – Ph.D.
Themis Silva- Ph.D.



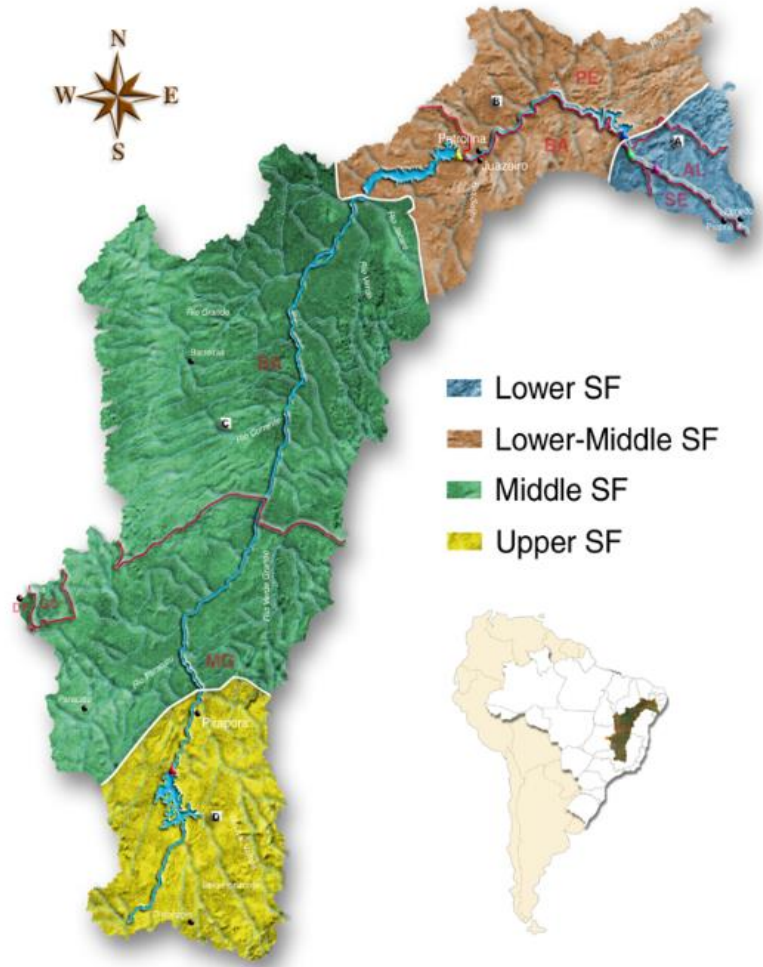
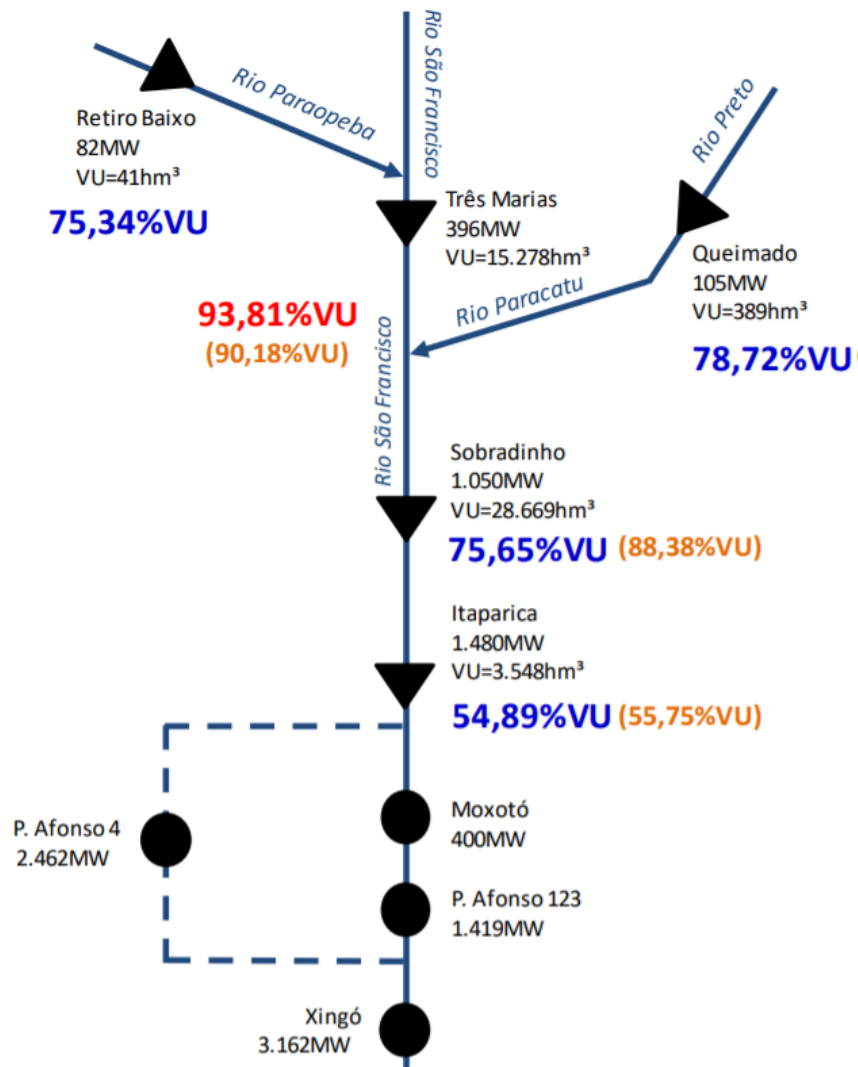
EXPEDIÇÃO
CIENTÍFICA
BAIXO SÃO FRANCISCO



Multiples uses

-  Fishing
-  Aquaculture
-  Agriculture
-  Livestock farming
-  Supply water to cities
-  Tourism
-  Electricity generation







- ✓ Ten cities
- ✓ 240 kilometers
- ✓ 35 areas of research
- ✓ 65 researchers
- ✓ 20 Institutions
- ✓ More of US\$ 400,000.00 in investments
- ✓ 10 days of Scientific Expedition
- ✓ More of 5,000 people benefited



O MAIOR RIO INTEIRAMENTE BRASILEIRO

EU ❤️ VELHO CHICO



O Rio São Francisco é o maior rio inteiramente brasileiro. Ele percorre 2.863 km, passando por seis estados (MG, GO, BA, PE, AL e SE), além do Distrito Federal.

A sua Bacia Hidrográfica engloba 505 municípios. Bacia Hidrográfica é a área ou região de drenagem de um rio principal e seus afluentes. É a porção do espaço em que as águas das chuvas, das montanhas, subterrâneas ou de outros rios escoam em direção a um determinado curso d'água, abastecendo-

Possui 168 afluentes, que são rios que deságuam em sua calha e têm um papel muito importante: eles são as veias capilares de uma bacia hidrográfica e tem o poder de influenciar na quantidade e na qualidade das águas. Mas, quando um rio afluente é poluído, provavelmente levará parte dessa poluição para o rio principal também.

Os biomas predominantes na Bacia do Rio São Francisco são o Cerrado, que cobre praticamente metade da Bacia (Minas Gerais e oeste e sul da Bahia), e a Caatinga, que domina as áreas de clima árido e semiárido, como Bahia, Pernambuco e oeste de Alagoas e Sergipe. A Mata Atlântica é predominante na região onde ocorre maior umidade no solo, ao longo de rios, formando as matas ciliares. Localiza-se em Minas Gerais e nas faixas costeiras de Sergipe e Alagoas (Alto e Baixo São Francisco).

2.863 km através de seis estados e o Distrito Federal	505 municípios	168 afluentes	18 milhões brasileiros vivendo em toda a bacia	3 biomas Cerrado, Mata Atlântica e Caatinga	9 usinas hidrelétricas
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Poste uma foto no Instagram, use a #virecarranca e participe do nosso mural no site virecarranca.com.br

/virecarranca

AGÊNCIA PEIXE VIVO
Agência de Bacia Hidrográfica

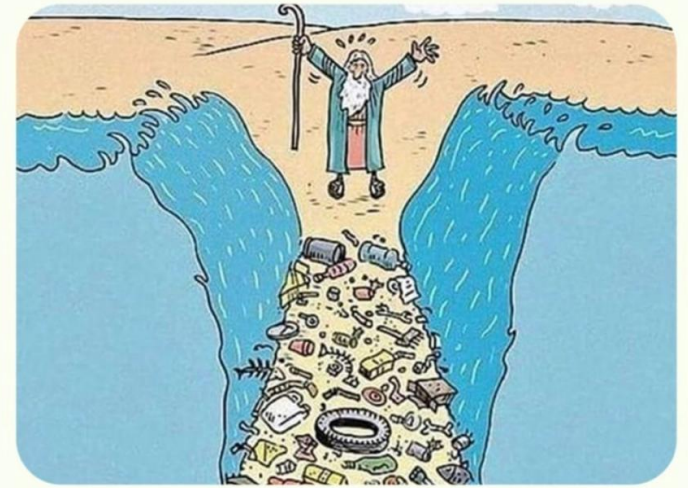
CBHSF
COMITÊ DA BACIA HIDROGRÁFICA DO RIO SÃO FRANCISCO



Quality of aquatic environmental

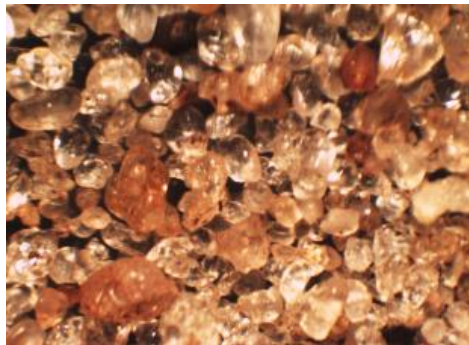
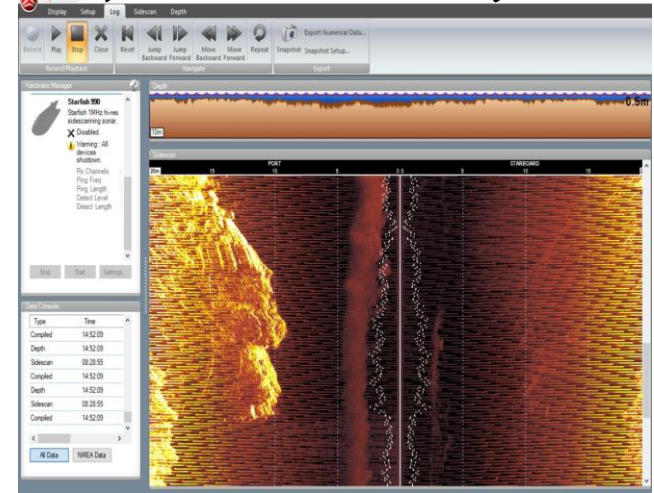


SE MOISÉS ABRISSE O MAR HOJE
ELE VERIA ISSO:

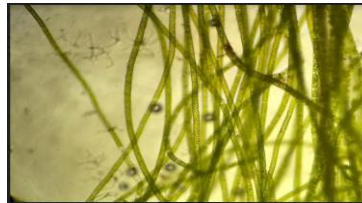
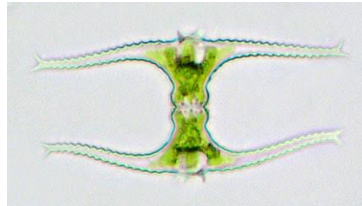


Silting and erosion

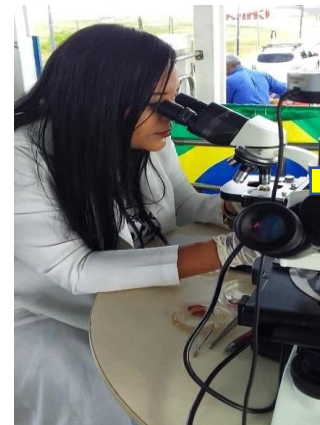
Changes in dynamic of river



Phytoplankton

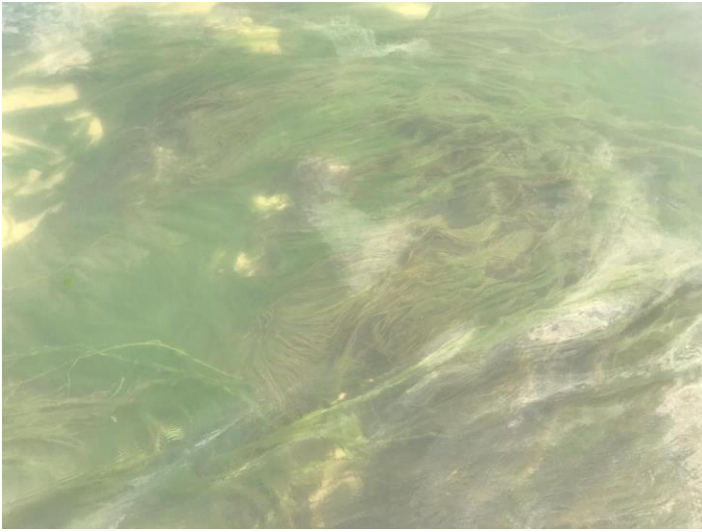


Increase of parasites

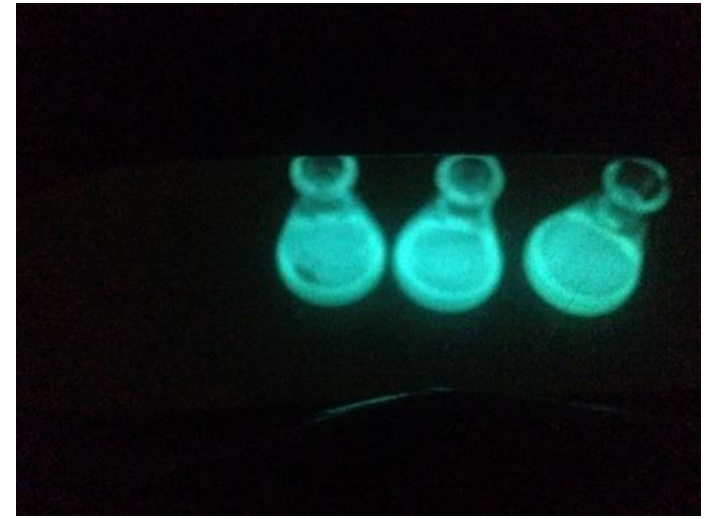


Calyptospora

Increase of macrophytes



Pollution and coliforms



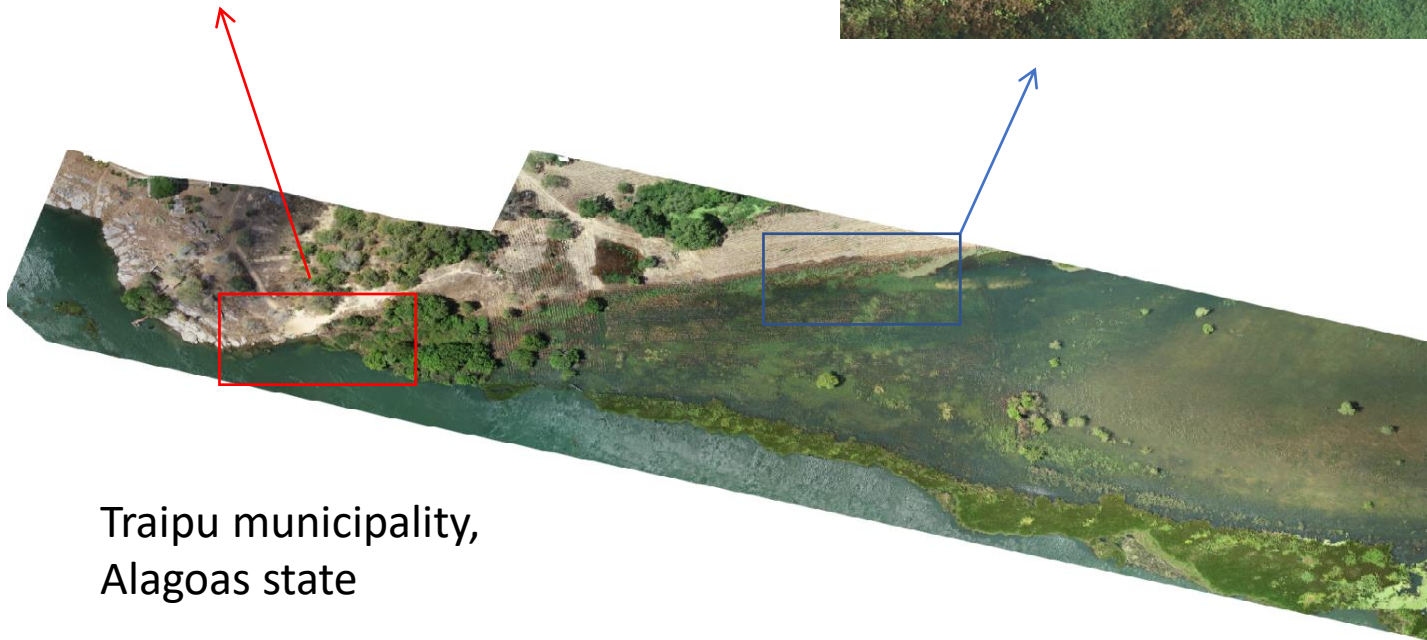
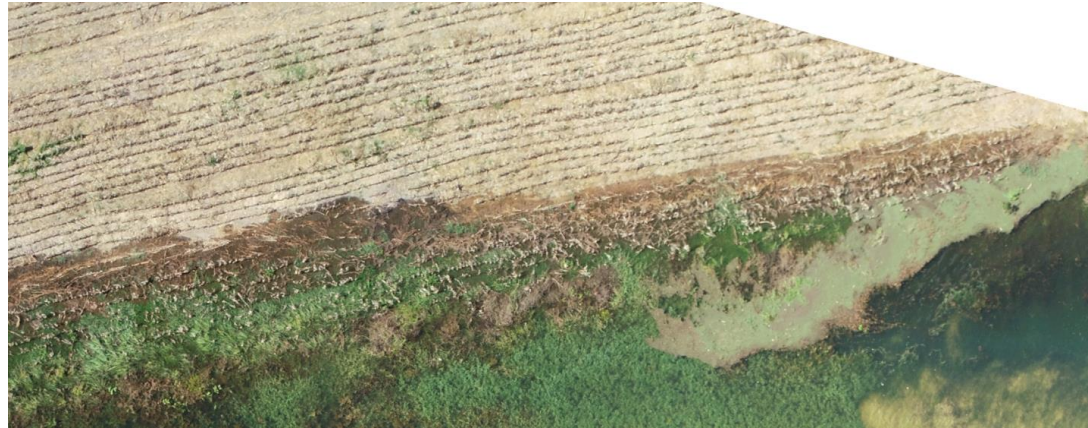
Hydric crisis



Problems with water quality



Desforestation x agriculture x pesticides



Traipu municipality,
Alagoas state

Picture with 800
meters of river
margin

Evaluation of Nile tilapia (*Oreochromis niloticus*) fingerlings exposed to the pesticide pyriproxyfenFabio Francisco da Silva^{1,2}, Jaqueline Maria da Silva², Themis de Jesus da Silva¹
Bruno Mendes Tenorio³, Fernanda das Chagas Angelo Mendes Tenorio⁴, Elton Lima Santos¹
Sonia Salgueiro Machado² & Emerson Carlos Soares¹¹Aquaculture and Water Quality Laboratory, Agricultural Science Center
Federal University of Alagoas, Rio Largo, Alagoas, Brazil²Laboratory of Biotechnology and Enzymology, Institute of Chemistry and Biotechnology
Federal University of Alagoas, Maceió, Alagoas, Brazil³Department of Morphology, Health Sciences Center, Federal University of Paraíba
João Pessoa, Paraíba, Brazil⁴Department of Histology and Embryology, Bioscience Center, Federal University of Pernambuco
Recife, Pernambuco, Brazil

Corresponding author: Emerson Carlos Soares (soaemerson@gmail.com)

ABSTRACT. *Oreochromis niloticus* (Nile tilapia) is one of the most produced fish for human consumption

Can fractal methods applied to video tracking detect the effects of deltamethrin pesticide or mercury on the locomotion behavior of shrimps?

Bruno Mendes Tenorio^{a,*}, Eurípedes Alves da Silva Filho^b, Gentileza Santos Martins Neiva^b,
Valdemiro Amaro da Silva, Junior^c, Fernanda das Chagas Angelo Mendes Tenorio^d,
Themis de Jesus da Silva^e, Emerson Carlos Soares e Silva^e, Romildo de Albuquerque Nogueira^f^a Department of Morphology, Federal University of Paraíba, João Pessoa, Paraíba, Brazil^b Institute of Biological and Health Sciences, Federal University of Alagoas, Maceió, Alagoas, Brazil^c Department of Veterinary Medicine, Federal Rural University of Pernambuco, Recife, Pernambuco, Brazil^d Department of Histology and Embryology, Federal University of Pernambuco, Recife, Pernambuco, Brazil^e Agricultural Science Center, Federal University of Alagoas, Maceió, Alagoas, Brazil^f Department of Animal Morphology and Physiology, Federal Rural University of Pernambuco, Recife, Pernambuco, Brazil

ARTICLE INFO

ABSTRACT

Keywords:
Movement behavior

Shrimps can accumulate environmental toxicants and suffer behavioral changes. However, methods to quantitatively detect changes in the behavior of these shrimps are still needed. The present study aims to

Research Article

Potential of carapeba (*Eugerres brasiliensis*) for aquaculture productionEmerson Carlos Soares¹, Andréa Guimarães-Paiva¹, Elton Lima-Santos¹, Simone Moreira-Pereira¹
Eduardo Santana-Santos¹, Erika Oliveira Almeida² & Themis Jesus Silva¹¹Federal University of Alagoas, Brasil²Federal Rural University of Amazon, Brasil

Corresponding author: Emerson Carlos Soares (soaemerson@gmail.com)

ABSTRACT. *Eugerres brasiliensis* is an appreciated commercial species in the market of the northeastern region of Brazil. The purpose of this study was to analyze and determine the diet, reproductive period, and management of carapeba in recirculating aquaculture systems. The fishes were caught with a gillnet at two different places near the São Francisco River mouth. The stomach content was analyzed according to the frequency of occurrence method, using the index of relative importance, assessing the degsubjectedree of stomach repletion. The reproductive period was established by determining the gonadosomatic index and gonad maturation stages. The behavior and management of the fish were observed in captivity when subjected to artificial diets in cultivation tanks. The striped carapeba is best feed at dusk, mainly Crustacea Amphipoda, Insecta Chironomidae and Crustacea Tanaidacea. The species has parceled spawning, which occurs from February to March and from July to September. There are morphological differences between males and females, especially in the urogenital papilla, size and color. In captivity, the best fish density was between 7 and 8 fish m⁻³, showing a good rates of centesimal composition, adapting well to the supplied diet.

Oil impact on the environment and aquatic organisms on the coasts of the states of Alagoas and Sergipe, Brazil - A preliminary evaluation

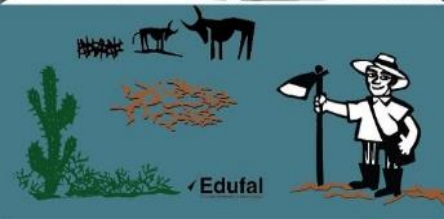
Emerson Carlos Soares^{a,*}, Mozart Daltro Bispo^b, Vivian Costa Vasconcelos^a,
João Inácio Soletti^b, Sandra Helena Vieira Carvalho^b, Maria Janaína de Oliveira^c,
Mayara Costa dos Santos^c, Emerson dos Santos Freire^c, Aryanna Sany Pinto Nogueira^c,
Francisco Antônio da Silva Cunha^c, Rafael Donizete Dutra Sandes^d,
Raquel Anne Ribeiro dos Santos^d, Maria Terezinha Santos Leite Neta^d, Narendra Narain^d,
Carlos Alexandre Borges Garcia^e, Silvano Silvério Lopes da Costa^e,
Josué Carinhonha Caldas Santos^{e,f}^a Laboratory of Water Analyzes and Aquaculture (LAQUA), Agricultural Science Center, Federal University of Alagoas (UFAL), CECA, 57100-000 Rio Largo, Brazil.^b Laboratory of Separation System and Process Optimization (LASSOP), Research Laboratory in Chemistry of Natural Products (LPQPN), Technology Center, Federal University of Alagoas (UFAL), Maceió, Alagoas 57072-970, Brazil^c Laboratory of Instrumentation and Development in Analytical Chemistry (LINQA), Institute of Chemistry and Biotechnology, Federal University of Alagoas (UFAL), Campus A.C. Simões, 57072-900 Maceió, Alagoas, Brazil^d Laboratory of Flavor and Chromatographic Analysis (LAF), Federal University of Sergipe (UFS), São Cristóvão, Sergipe 49100-000, Brazil

Emerson Carlos Soares
José Vieira Silva
Rafael Novas
(Organizadores)



O Baixo São Francisco

Características Ambientais e Sociais



Edufal

Relatório da II Expedição do baixo São Francisco



GUIA DE CAMPO

ANÁLISES DOS RIOS - APACC

LABORATÓRIO DE AQUICULTURA E ANÁLISE DE ÁGUA(LAQUA)- UFAL/CECA ICMBIO - NGI COSTA DOS CORAIS

LABORATÓRIO DE INOVAÇÃO E ACELERAÇÃO DE SOLUÇÕES SUSTENTÁVEIS

1ª OFICINA DE REINVENÇÃO PARA A BACIA DO SÃO FRANCISCO

DATA 06/12 às 15h

TEMA

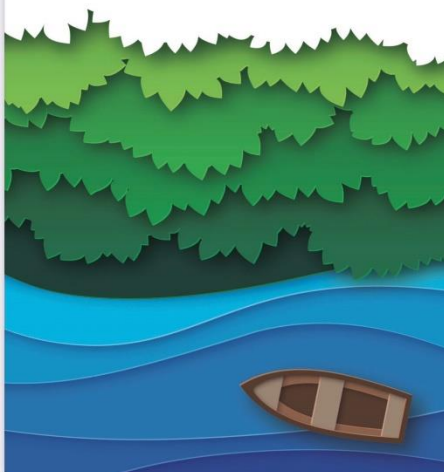
FLEXIBILIZAÇÃO DA OPERAÇÃO DOS RESERVOÁRIOS E SEUS IMPACTOS SOBRE OS USOS MÚLTIPLOS

Convidamos você para participar da 1ª OFICINA DE REINVENÇÃO PARA A BACIA DO SÃO FRANCISCO, que se propõe a discutir os desafios para a regeneração da Sub-Bacia do Baixo São Francisco. As atividades fazem parte das ações do Laboratório de Inovação e Aceleração de Soluções Sustentáveis, idealizado pelo Centro Brasil no Clima como parte do Projeto HidroSinergia.

1 de 48

GUIA DE CAMPO

Como monitorar a qualidade dos rios



Relatório da III Expedição do baixo São Francisco



Notícias do São Francisco

travessia

JORNAL DO COMITÊ DA BACIA HIDROGRÁFICA DO RIO SÃO FRANCISCO | NOVEMBRO 2021 | Nº 55

Expedição Científica realiza estudos e leva assistência para comunidades ribeirinhas no Baixo São Francisco

CBHSF Associação Brasileira de Hidrografia e Saneamento Ambiental

Página 4

Expedition on the Lower São Francisco: An X-ray of fisheries and agriculture, pollution, silting and saline intrusion

Expedição no Baixo São Francisco: um raio-X da pesca e agricultura, poluição, assoreamento e intrusão salina

DOI:10.34117/hjdv6n1-221

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Aceitação para publicação: 21/01/2020

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Doutor em Recursos Hídricos, Pesquisador Embrapa Tabuleiros Costeiros, Avenida Beira Mar, 3.250, Bairro Jardins, Aracaju, SE, CEP 49025-040, Brasil
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E-mail: elton@zootecnista.com.br

Ticiano Rodrigo Oliveira

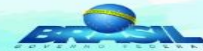
Doutorando em Ecologia, Universidade Federal de Sergipe, Av. Marechal Rondon, s/n - Jardim



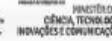
EXPEDIÇÃO CIENTÍFICA DO RIO SÃO FRANCISCO



MINISTÉRIO DA
CIÊNCIA, TECNOLOGIA,
INOVAÇÕES E COMUNICAÇÕES



2ª Expedição Científica do Rio São Francisco 18 a 27 de novembro de 2019



3ª Expedição Científica do Rio São Francisco 30 de novembro a 10 de dezembro de 2020

Financiadores:

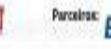


Parceiros:

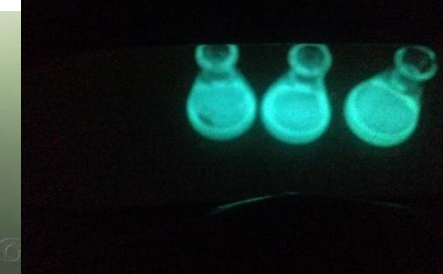


4ª Expedição Científica do Rio São Francisco 01 a 10 de novembro de 2021

Financiadores:



Parceiros:



Scientific Expedition Research Areas (2021)



- Contamination



- Environment robotics



- Biosensors



- Environment education



- Limnology and water quality



- Aquatic Archeology



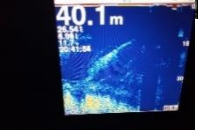
- Macrophytes



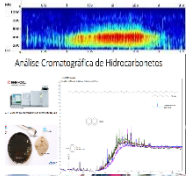
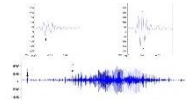
- Fatty oil content



- Ichthyology and Physiology



- Fishing



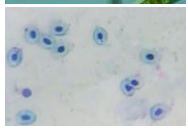
- Acoustic Ecology



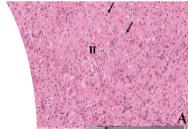
- Analyze of Pesticides



- Reforestation



- Phytoplankton



- Parasitology



- Nuclear abnormalities



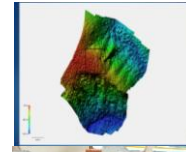
- Histopathology



- Microbiology

- Toxic metals

- Sediments



- Geoprocessing



- Dentistry, Oncology



- Ciliary forests



- Tecnology of fish



- Reproduction of fish



- Carcinology and river estuary study



- Deforestation



- Meteorology

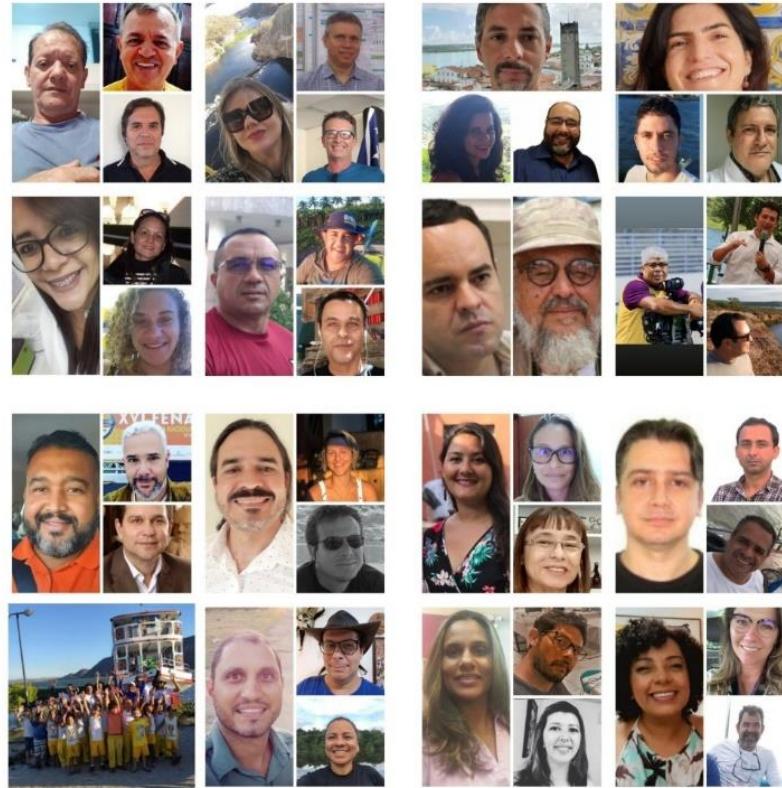


- technicals equipments



- Social Technology

Meetings and collaboration(2021)



Institutions 2021

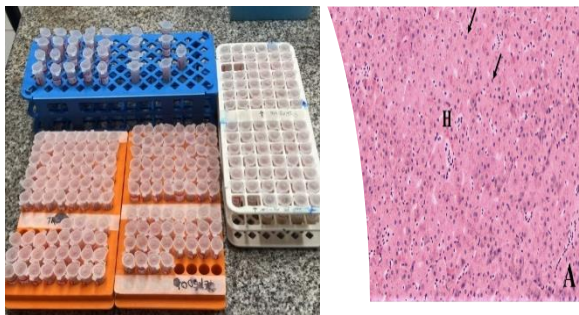


- UFAL – FEDERAL UNIVERSITY OF ALAGOAS
- UFS – FEDERAL UNIVERSITY OF SERGIPE
- EMATER
- MCTI- MINISTRY OF SCIENCE AND TECHNOLOGY
- SEMARH-AL
- CODEVASF
- UNIR- FEDERAL UNIVERSITY OF RONDONIA
- UFAM
- IFAL
- EMBRAPA
- INPI
- ITPS
- FAPEAL – FUNDATION OF SUPPORT THE RESEARCH
- UFPB – FEDERAL UNIVERSITY OF PARAIBA
- CBHSF – SÃO FRANCISCO RIVER BASIN COMMITTEE
- Triunfo pedreira
- UFRPE – FEDERAL AGRICULTURAL UNIVERSITY OF PERNAMBUCO
- TV Gazeta
- Blog São Francisco
- Municipalties of Piranhas, Pão de Açúcar, Traipu, São Brás, Porto Real do Colégio, Igreja Nova, Penedo e Piaçabuçu

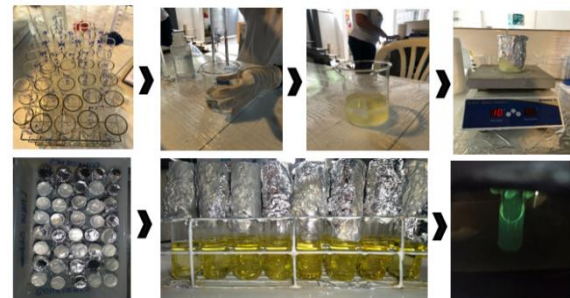
Actions in 2021



Study of sediments and silting



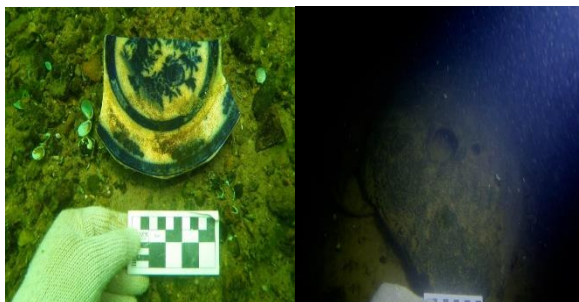
Histopathological study



Microbiology aquatic



Organic certification



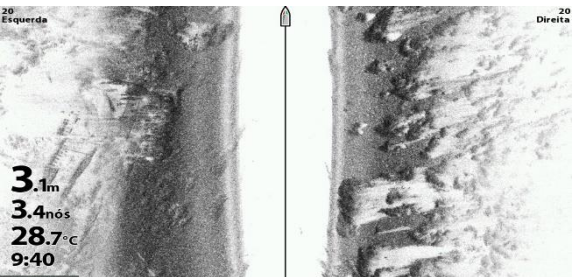
Aquatic Archeology



Metals in fish



Limnology and salt wedge



River topology



Study of the river estuary



Meteorology



Analyze





Fishing assessment



Fish Fauna aquatic



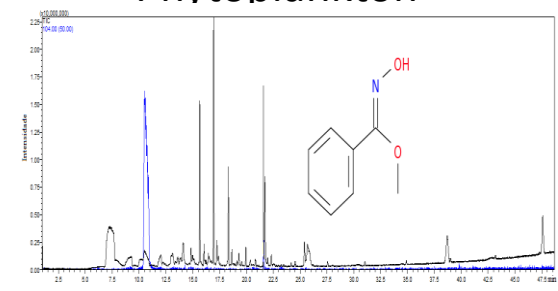
Phytoplankton



Fauna study



Ciliary forest



Emerging pollutants



Oral health



Geoprocessing



Communities



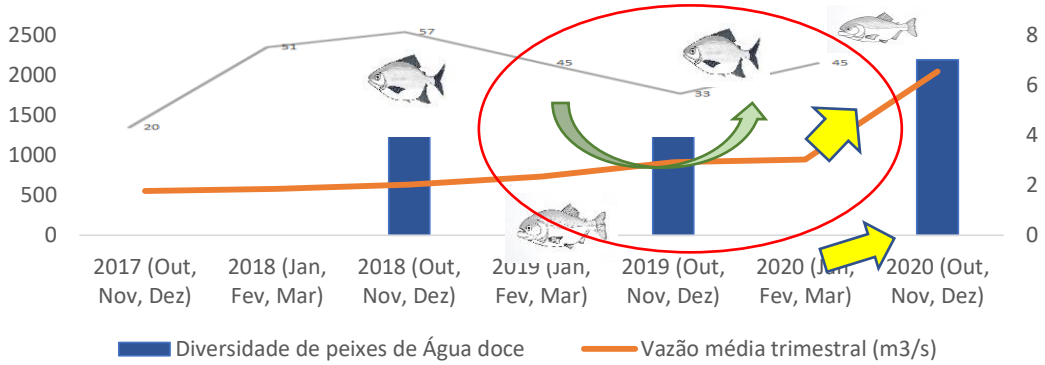
Fish acoustics



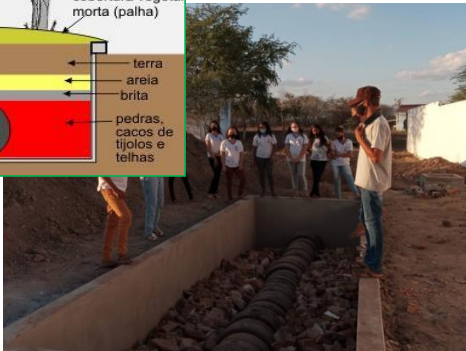
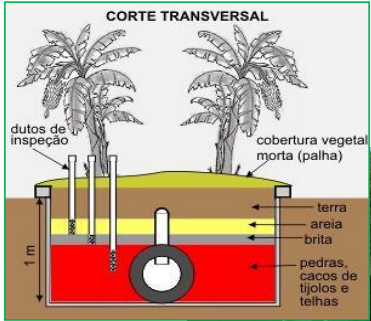
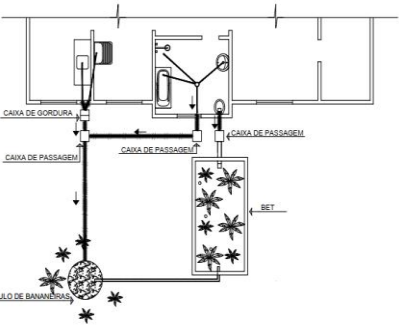
Reproduction study



Bacteriological study



Modeling



agroecological cesspools



Skin edema surgeries



Mapping and unmanned aerial vehicle



Scientific documentary



ENVIRONMENTAL EDUCATION IN RIVERSIDE PUBLIC SCHOOLS

Partners: SEMARH e MCTI

Donation from:

- notebooks (04)
- datashow (03)
- speakers (03)
- school supplies kit (400)
- material kits for environmental education for schools (08)
- educational game kits (08)
- 8 PEVs (voluntary delivery point)
- bibliographic material

Municipalities: Piranhas, Pão de Açúcar, Traipu, São Brás, Propriá (SE), Igreja Nova (Chinaré), Penedo and Piacabucu



SOCIAL ACTIONS AND ASSOCIATIONS CERTIFICATION

Partners: CODEVASF e MCTI

Donation of three (03) microtractors with implements (motorized patrol) to associations in the process of organic certification.



Microtractor (15 hp), rotary hoe, trailer, mechanized sprayer, front mower, shaver and 2-row planter.

4ª Expedição Científica do Rio São Francisco

01 a 10 de novembro de 2021



WEBINÁRIO
FLEXIBILIZAÇÃO DAS VAZÕES
E SEUS IMPACTOS NA BACIA
HIDROGRÁFICA DO
RIO SÃO FRANCISCO

03 de junho | 16 horas

Transmissão ao vivo
youtube.com/cbhsaofrancisco

VELHO CHICO PARA TODOS
 #VIRECARRANCA

Acompanhe as palestras da
4ª Expedição Científica do
São Francisco

1, 7, 8 e 9 de Novembro

Ufal Oficial

@fapeal.br

RÁDIO UFAL
 Universidade Federal de Alagoas

Boletim do Velho Chico

Informações da Expedição Científica do Baixo São Francisco

Ao vivo

Últimos Episódios

- Achados arqueológicos na 4ª Expedição
- monitoramento aéreo do Rio São Francisco
- A água do Rio São Francisco
- A vice-reitora Eliane Cavalcanti avalia a Expedição

350 reports in tv and sites in four years

Communication of 4ª Scientific Expedition

	Sites*	TV	Magazines	Radio	Instagram and YouTube**
Reports	Site of UFAL – 15 Newspaper– 7 Site of collaborations Embrapa – 15 Sites locals* - 48	40 reports –	Travessia (CBH São Francisco) – 1 SBPC - 1	Radio- 11 Podcast Travessia (CBH) - 3	Posts no feed: 60 Reels: 10 Vídeos: 20 Stories: 591
Total	69	34	2	12	671

The Project is priority of Brazil- week of National of Science and Techonology



Ministry of the Environment Ambiente



With the minister of science and technology of Brazil- Marcos Pontes



Conference of MCTI - Ministry of Science and Technology





astropontes



expedicao_saofrancisco e ufaloficial
Pavilhão de Exposições do Paque da Cidade



Apoio

Secretaria de Exportação e Comércio Exterior
Secretaria de Ciência, Tecnologia e Inovação
Secretaria de Educação



Patrocínio

Instituto TIM surf Correios

MINISTÉRIO DA COMUNICAÇÃO
MINISTÉRIO DA CIDADANIA
MINISTÉRIO DO DESENVOLVIMENTO REGIONAL
MINISTÉRIO DA AGRICULTURA, PECUÁRIA E ABASTECIMENTO

Realização

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÕES
PÁTRIA AMADA BRASIL



Practical actions in communities in 2021

- Physiotherapy for old people in 9 cities;
- Donation of 500 oral health kits and dentistry action in schools;
- Planting of 1500 native plant seedlings on the banks of the São Francisco;
- Installation of 6 agro ecological septic tanks with generation of biofertilizer;
- Environmental education in 10 municipal schools;
- Donation of 3 mini tractors to communities;
- Mapping of lower São Francisco river;
- Liberation of 110,000 fingerlings of native species in the lower course of the river;
- Organic certification of two associations (Aroeira e apicultores);
- Donation of 8 structures of selective collection garbage
- Donation of 4 notebooks, 4 data show, 1 tablet and 3 speakers to rural schools;
- 10 nightly conferences for communities
- Ten skin edema surgeries
- Donation of 400 school material kits for children in rural schools;
- Donation of 10 kits with 15 educational games for rural schools;
- Donation of 400 shirts and 400 hats;
- Conducting 610 RT-PCR exams in the riverside population;
- Conference about microplastics in rural schools;
- Production of 3 scientific documentaries.

Practical actions in riverside people in 2022

- *One more boat human health: oral health, gynecological exams, skin edema surgeries, complete blood count, covid exams;*
- *geographical indication seal: products such as honey and products handcraft;*
- *Mapping of submerged archaeological sites;*
- *New biomonitoring program for the Lower San Francisco (2022- 2026);*
- *Donation of notebooks, datashows, material kits of environmental education to schools;*
- *Donation of one microtractor;*
- *Installation agroecological cesspools in five schools;*
- *Reforestation of two marginal areas;*
- *Development of project with reuse of aquatic macrophytes;*
- *Cooperation with ONU with seal of institution;*
- *Creation of the water startup, and São Francisco River Aquarium;*
- *Production of 1 book, 2 scientific documentaries and 1 information booklet for the riverside population;*
- *Installation of the mayors' forum in the lower São Francisco;*
- *Support for ecotourism;*
- *Modernize the documents for the protection of the native fish fauna of the São Francisco;*
- *Contribution to realize the Scientific Expedition of lower-middle São Francisco*
- *Project: Important areas for reproduction and management of native fish species*
- *Exhibition of the Biennial of the book at the opening of the scientific expedition in the city of Piranhas;*



VIDEO