



Food and Agriculture
Organization of the
United Nations

Empowering Artisanal Fisheries to manage communal grounds Equatorial Guinea

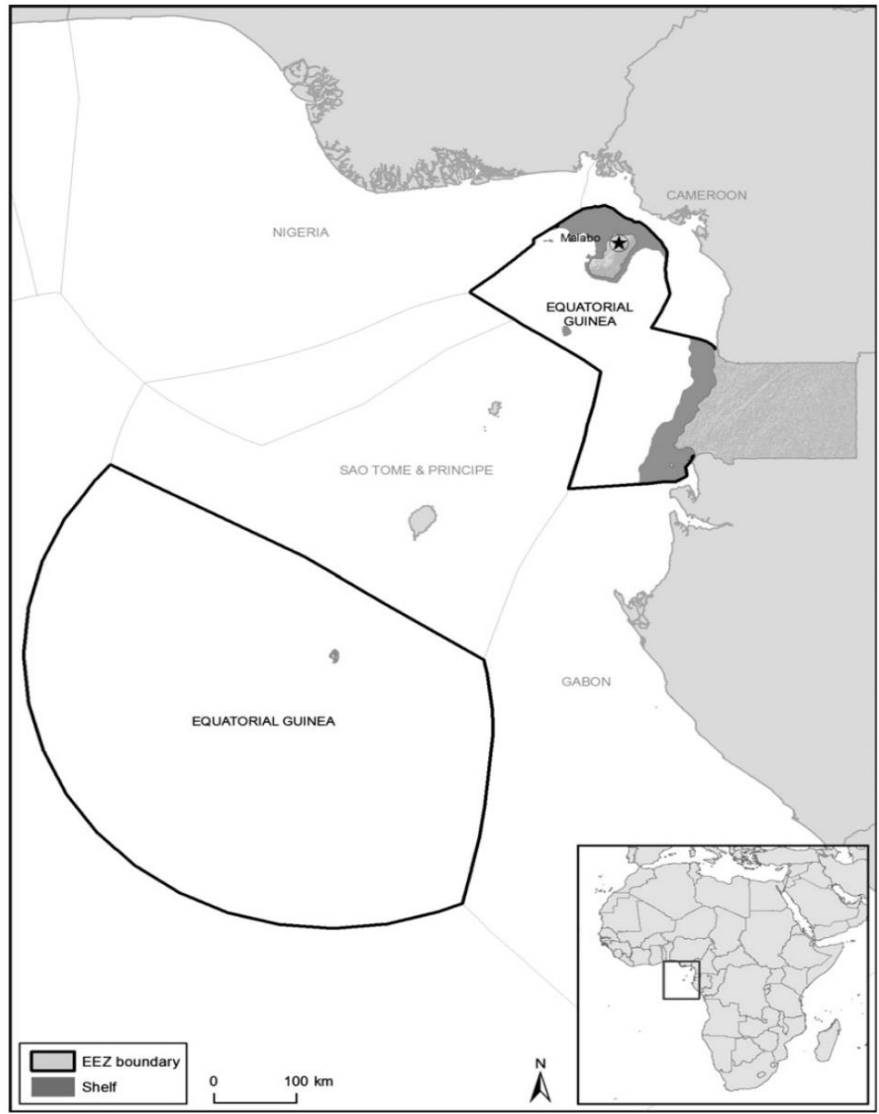
**Christian Barrientos
Wildlife Conservation Society**

SDG 14 Targets

- ✓ By 2020, sustainably manage and protect marine and coastal ecosystems
- ✓ By 2020, conserve at least 10 % of coastal and marine areas
- ✓ Increase scientific knowledge, develop research capacity and transfer marine technology
- ✓ Provide access for small-scale artisanal fishers to marine resources and markets
- ✓ Enhance the conservation and sustainable use of oceans and their resources

Why EG ?

- **Size of EEZ:** ~314,400 km²
- **Current MPA coverage:** is approximately 1,524 km² (0.5% EEZ)
- **Gap to get to 10% by 2020:** 29,916 km² (9.5% EEZ)





ELSEVIER

Contents lists available at ScienceDirect

Biological Conservation

journal homepage: www.elsevier.com/locate/biocon



A return-on-investment framework to identify conservation priorities in Africa



Timothy H. Tear^{a,*}, Bradford N. Stratton^b, Edward T. Game^c, Matthew A. Brown^d, Colin D. Apse^e, Rebecca R. Shirer^f

^a Grumeti Fund, P.O. Box 0, Mawalla Park, Olasiti Road, Arusha, Tanzania

^b New York City Department of Parks and Recreation, Olmstead Center, Flushing Meadows-Corona Park, Flushing, NY 11368, USA

^c The Nature Conservancy, West End, QLD 4101, Australia

^d The Nature Conservancy, Plot # 16002 Mawalla Street, P.O. Box 13265, Arusha, Tanzania

^e The Nature Conservancy, 14 Maine Street, Suite 401, Brunswick, ME 04011, USA

^f The Nature Conservancy, 195 New Karner Road, Albany, NY 12205, USA

ARTICLE INFO

Article history:

Received 18 October 2013

Received in revised form 13 January 2014

Accepted 16 January 2014

Available online 9 April 2014

Keywords:

Cost

Governance

Prioritization

ROI

Uncertainty

Ibrahim Index

Biodiversity

ABSTRACT

Environmental conservation activities must continue to become more efficient and effective, especially in Africa where development and population growth pressures continue to escalate. Recently, prioritization of conservation resources has focused on explicitly incorporating the economic costs of conservation along with better defining the outcomes of these expenditures. We demonstrate how new global and continental data that spans social, economic, and ecological sectors creates an opportunity to incorporate return-on-investment (ROI) principles into conservation priority setting for Africa. We suggest that combining conservation priorities that factor in biodiversity value, habitat quality, and conservation management investments across terrestrial, freshwater, and coastal marine environments provides a new lens for setting global conservation priorities. Using this approach we identified seven regions capturing interior and coastal resources that also have high ROI values that support further investment. We illustrate how spatially explicit, yet flexible ROI analysis can help to better address uncertainty, risk, and opportunities for conservation, while making values that guide prioritization more transparent. In one case the results of this prioritization process were used to support new conservation investments. Acknowledging a clear research need to improve cost information, we propose that adopting a flexible ROI framework to set conservation priorities in Africa has multiple potential benefits.

© 2014 The Authors. Published by Elsevier Ltd. Open access under [CC BY-NC-SA license](https://creativecommons.org/licenses/by-nc-sa/4.0/).

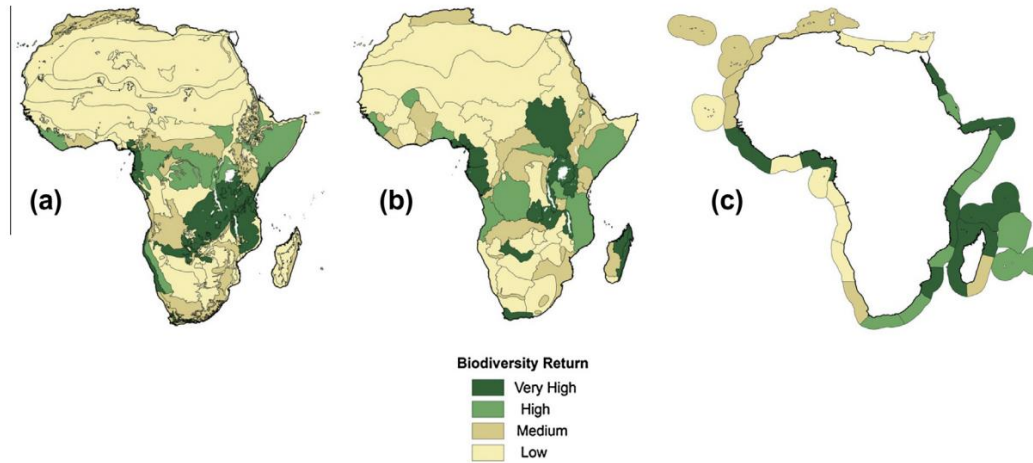


Fig. 2. Relative biodiversity return rating used in return-on-investment assessment for (a) terrestrial, (b) freshwater, and (c) coastal marine ecoregions.

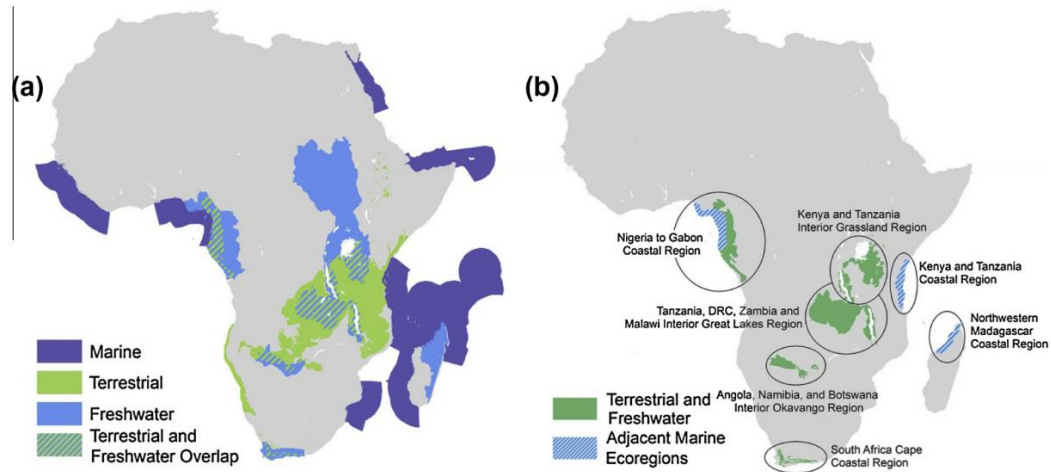


Fig. 3. Areas of overlap or intersection among the ecoregions with the highest biodiversity significance rating for (a) each major environment type and (b) corresponding regional descriptions.



Filling a blank on the map: 60 years of fisheries in Equatorial Guinea

D. BELHABIB

Sea Around Us Project, Fisheries Centre, University of British Columbia, Vancouver, BC, Canada

D. HELLEBRANDT DA SILVA

School of International Development, University of East Anglia, Norwich, UK

E. H. ALLISON

School of Marine and Environmental Affairs, University of Washington, Seattle, WA, USA

D. ZELLER & D. PAULY

Sea Around Us Project, Fisheries Centre, University of British Columbia, Vancouver, BC, Canada

Abstract Despite a scarcity of pertinent information, it has been possible to reconstruct time series of marine fisheries catches for Equatorial Guinea from 1950 to 2010 using per capita fish consumption and population numbers for small-scale fisheries, catch rates and number of vessels for industrial fisheries and discard rates to estimate the discarded bycatch. Small-scale fisheries, industrial large-scale fisheries, domestic and legal and illegal foreign fisheries and their discards are all included. Total catches were estimated at 2.7 million tonnes over the time period considered, of which 653 000 t were caught domestically compared to 187 000 t reported by FAO. This shows that fisheries have more importance for Equatorial Guinea's food security than the official data suggest. In contrast to what is suggested by official figures, fisheries were shown to be strongly impacted by civil and political unrest; notably, they declined overall because of civil and political conflicts, socio-demographic dynamics, and a growing role of the newly discovered oil resources, which directly and indirectly threaten the food security of the people of Equatorial Guinea.

KEY WORDS: catch reconstruction, FAO data, large-scale fisheries, small-scale fisheries, under-reporting.

Introduction

Truly global assessments of the status of fisheries are compromised by 'blanks on the map' – countries where official data either do not exist or are not provided to the UN Food and Agriculture Organization (FAO), which compiles such data. Even if such countries do provide estimates of fisheries catches, they are often based on perceived wisdom or 'best guesses', rather than direct survey or careful mining and reconstruction of available information. This study aimed to compile and analyse available information to fill in one such blank on the world fisheries map – Equatorial Guinea.

Equatorial Guinea (Fig. 1) consists of a mainland component, Río Muni, located between Cameroon and Gabon (where 80% of the population live), nearby islands (Corsico and the Elobay group) and more distant islands including Bioko (the former Fernando Pó, off the coast of Cameroon) and Annobón (off the coast of Gabon). Equatorial Guinea gained independence from Spain in 1968. During the Spanish colonial period, Equatorial Guinea had the highest per capita income in Africa (Kümpel *et al.* 2010). After independence, a reign of terror under President Francisco Macías Nguema began (Fegley 1981); Equatorial Guinea became, between the late 1960s and the late 1970s, the most

Correspondence: Dyhia Belhabib, Sea Around Us, University of British Columbia, 2202, Main Mall, Vancouver, BC, Canada V6T 1Z2 (e-mail: d.belhabib@oceans.ubc.ca)

- Initial assessment
 - WCS starts in EG (2014)
 - Improve life quality in coastal communities; artisanal fisheries (2014-2019)
 - MPAs proposal (2017-2019)
 - Data scarce
- 
- The background features a light blue map of the Philippines. To the right of the map is a silhouette of a fisherman in a boat. Below these elements are stylized waves in shades of blue and white. The bottom of the slide is decorated with a pattern of concentric circles in light blue.

Approach

- 5 communities, in 3 coastal protected areas
- Community engagement
- Group formation
- dynamics of the fishers that operate within this sector
- location, size and attributes of important fishing grounds upon which communities are dependent

Approach

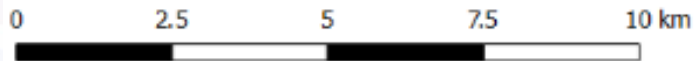
- spatiotemporal distribution of fishing effort
- ~11,000 "boats"
- ~ 85% canoes
- ~ 30% motor
- ~ 70% <7 m length (FAO 2016)

Approach

Salida pesca de Handje

Leyenda

- Pescador1-29/11/17-00H30
 - Pescador2-17/11/17-00H02
 - Pescador3-16/11/17-18H41
 - Pescador4-15/11/17-00H18
 - Pescador5-04/11/17-12H33
 - Pescador6-23/12/17-19H19
 - Pescador7-22/12/17-6H10
 - Pescador8-21/12/17-8H11
 - Pescador9-09/12/17-18h22
 - Pescador10-09/12/17-00h00
- Region Continental

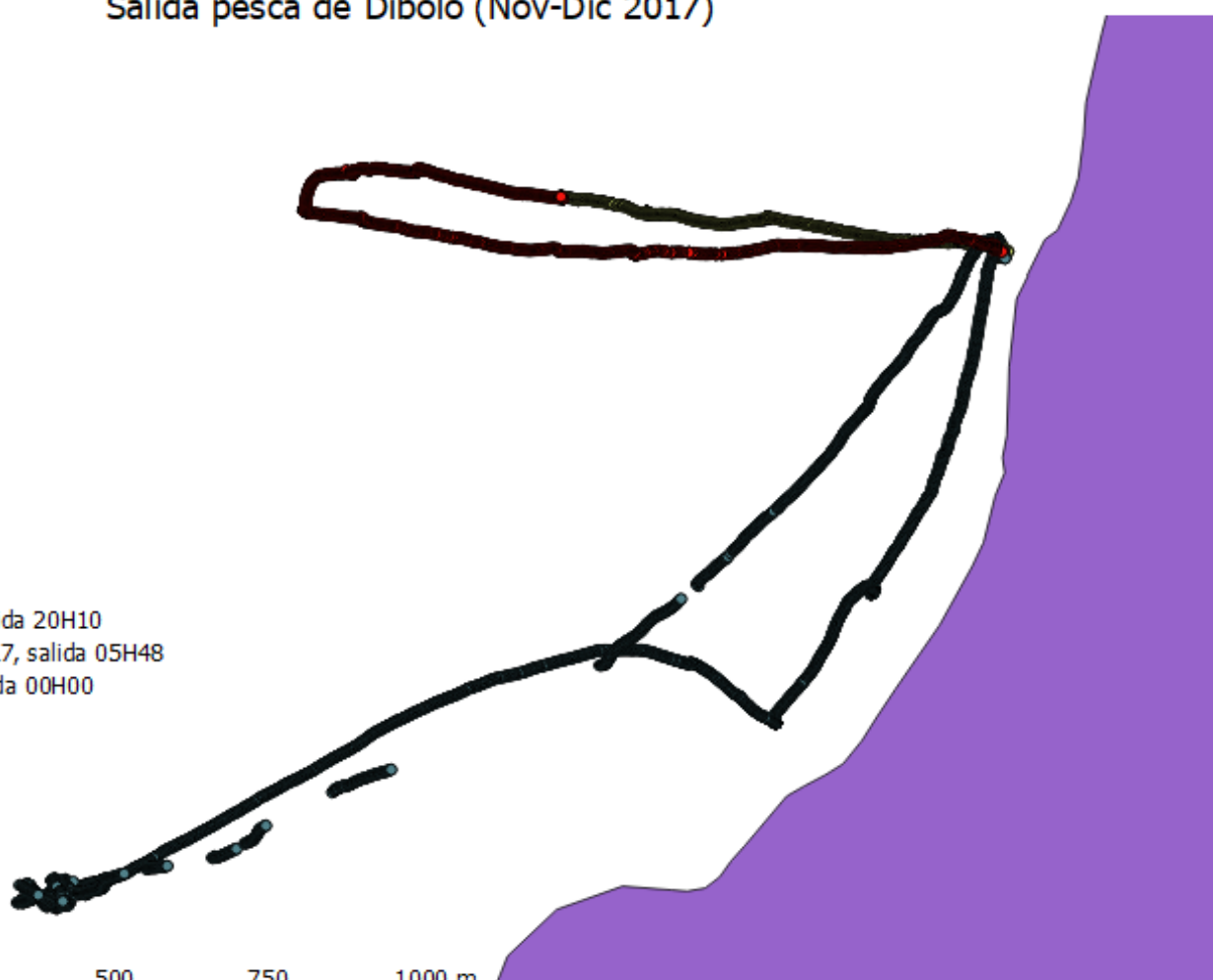


Salida pesca de Dibolo (Nov-Dic 2017)

Leyenda

- RAMON DIB-Nov17, salida 20H10
- Buenaventura DIB-nov17, salida 05H48
- RAMON DIB-Dic17, salida 00H00
- Costa de Dibolo

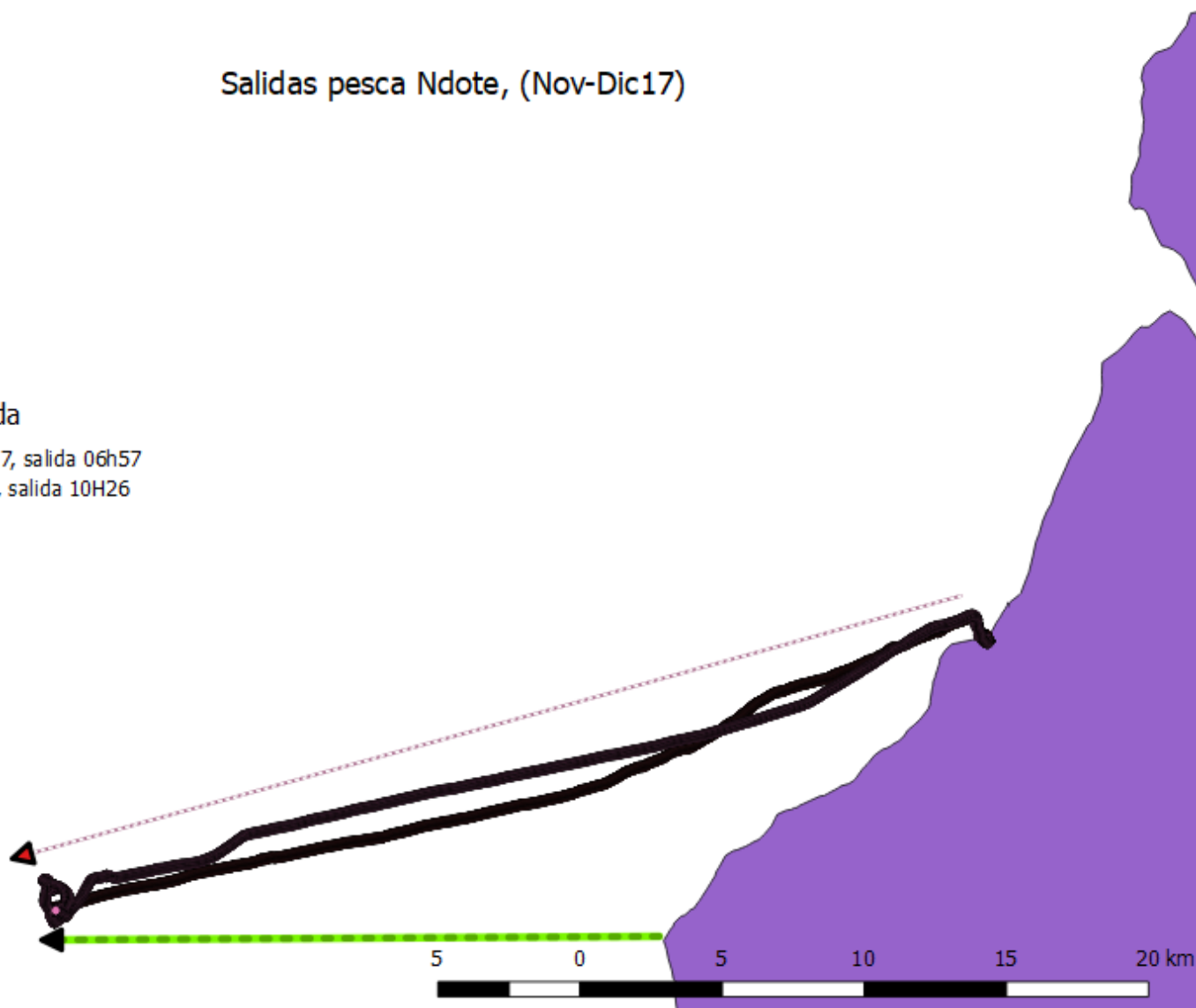
250 0 250 500 750 1000 m



Salidas pesca Ndote, (Nov-Dic17)

Leyenda

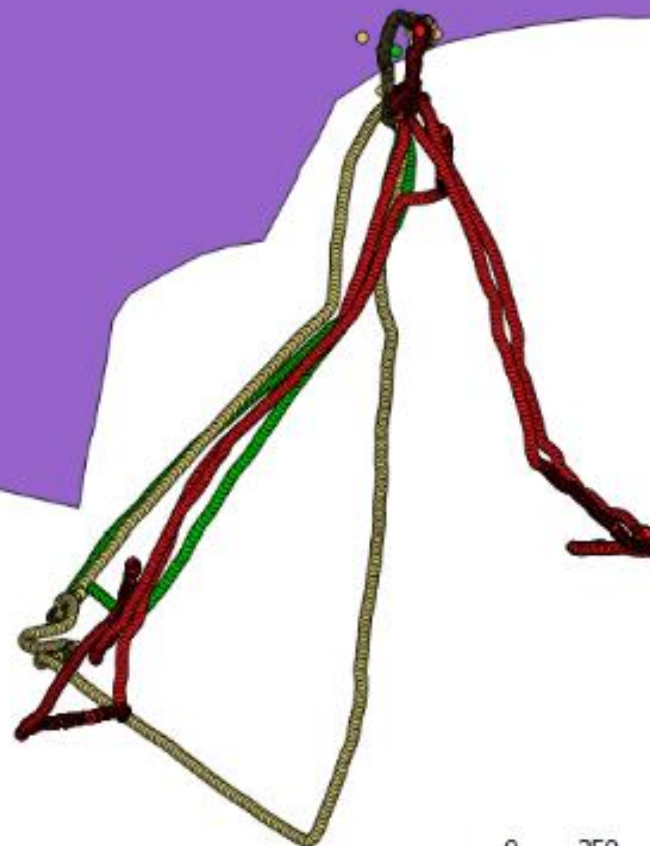
- Daniel Ndot-Nov17, salida 06h57
- Juan Ndot-Nov17, salida 10H26
- Playa de Ndote



Salida pesca de Pume

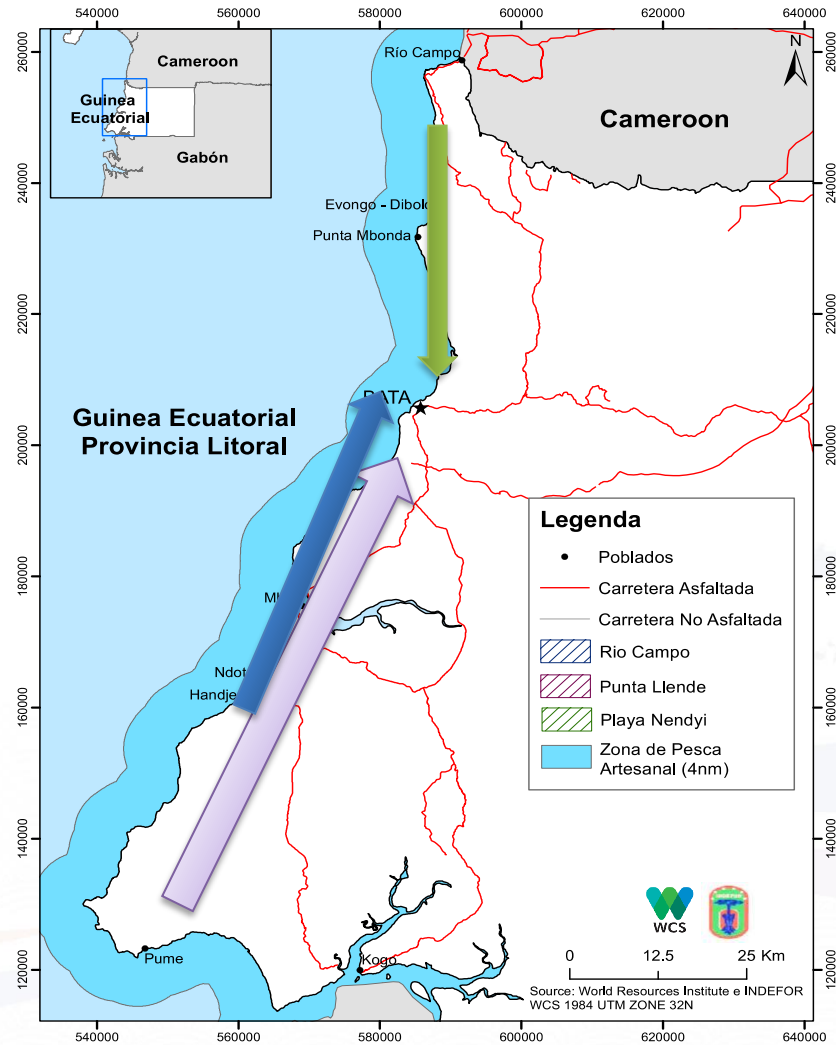
Leyenda

- Pescador1-14/11/17-15h42
- Pescador2-28/11/17-00h29
- Pescador1-16/12/17-00h48
- Region Continental

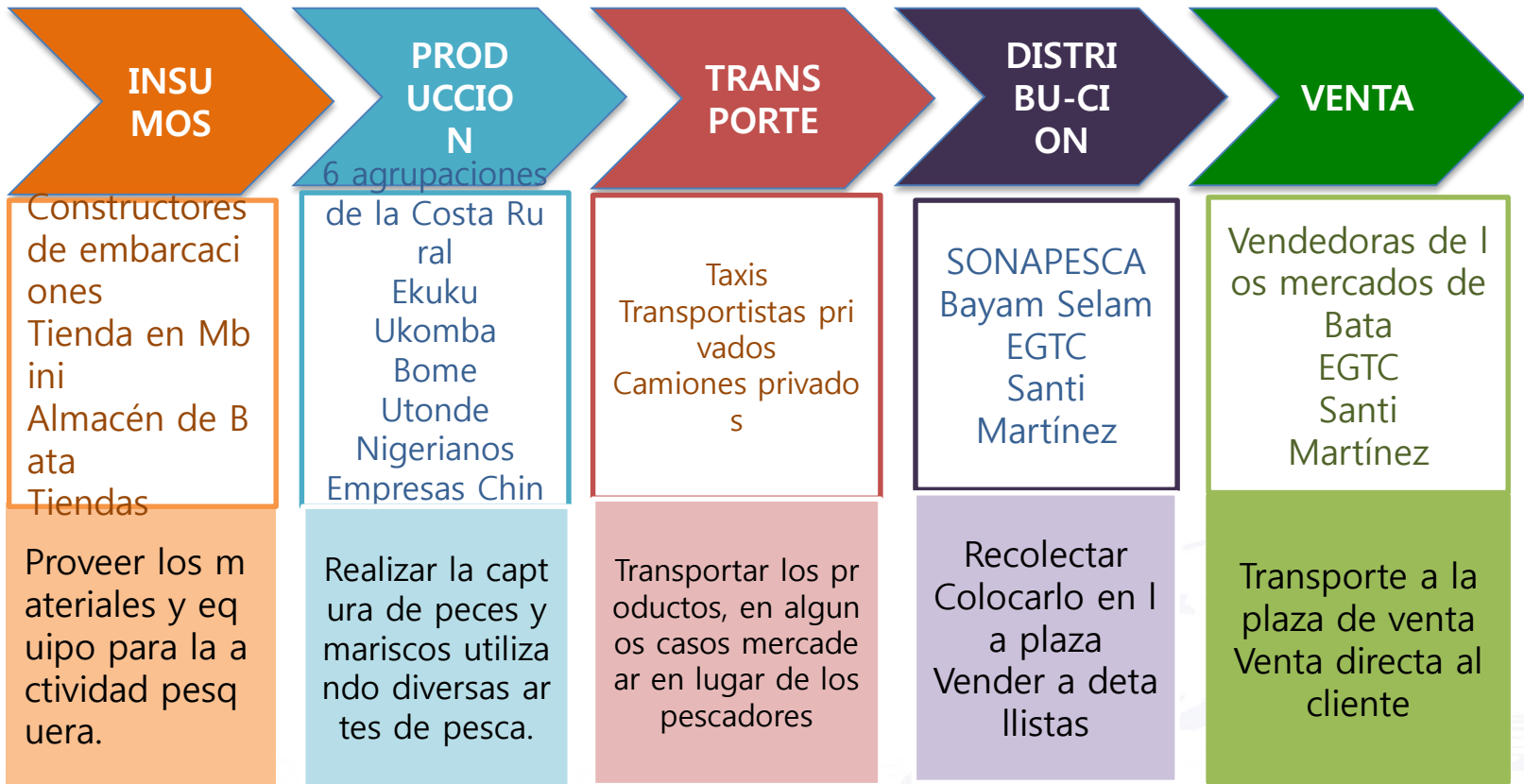


0 250 500 750 1000 m

Chain Value







Servicios de Apoyo

CAMARA DE COMERCIO

SONAPESCA

WCS

INPYDE

Telecomunicación

Servicios Financieros

Instituciones

Ministerio de Pesca y Medio Ambiente

AYUNTAMIENTOS

INDEFOR-AP



**INSU
MOS**

**PROD
UCCIO
N**

**TRANS
PORTE**

**DISTRI
BU-CI
ON**

VENTA

Conclusions

- By Law only 6 miles are considered artisanal fishery
- Some areas are larger
- Estimation of catch is pivotal to “lobby” with the government
- Chain value have many stakeholders
- Many sectors involved, men fish and women take charge of transformation and sell