



Monitoring small scale fisheries (canoe) trajectories in West Africa: interest for management and research perspective

**Patrice BREHMER^{1,4}, Aliou BA^{1,2,4}, Timothée BROCHIER^{1,4}, Julien BARDES³, Ismaila NDOUR⁴,
Sylvain BONHOMMEAU³, Tristan ROUYER³, Philippe CURY³, Alassane DIENG⁴,
Massal FALL⁴ and Chrtistian CHABOUD³**

¹Institut de Recherche pour le Développement (IRD), UMR 195 LEMAR, BP 1386 Dakar, Senegal

²Université Cheikh Anta Diop, Dakar (UCAD), Institut Universitaire des Pêches and d'Aquaculture (IUPA), Dakar, Senegal

³Institut de Recherches pour le Développement (IRD), UMR Marbec, Avenue Jean Moulin, 34270, Sète, France

⁴Institut Sénégalais de Recherches agricoles (ISRA), Centre de Recherches Océanographiques de Dakar-Thiaroye (CRODT), BP 2241, Dakar, Sénégal

*Correspondance: Tél: (221) 78 122 16 15; Courriel: Patrice.Brehmer@ird.fr (P. BREHMER)

Reçu le 13/12/2016; publié le 15/03/2017
AWA © MS WP2_S2_02b

Abstract

The West African small scale fisheries is often the main component vs industrial fisheries in biomass landing. More over the small scale fisheries is of major interest at socio economics level and is sometime a cultural activity. In Senegal the number of canoe operating in the sub region is around 16 000 to 22 000 canoes according to the source. Such huge fleet is particularly complex to manage and if industrial fishing fleet can be monitored with ad hoc system as VMS (Vessel Monitoring System) this is not the case (technical limitation) for fishermen canoe. In this work we present the results of a demonstration project showing the interest to monitor the canoe fishing trip using low cost portable autonomous global positioning system (GPS) developed by IRD. During one year some trial have been carry out in Hann a landing site of Dakar (Senegal). Preliminary results show that at a high temporal resolution the GPS allow to distinguish the fishing operation (e.g. line and seine) from the transit and exploration route. Such data allow to improve the estimation of the small scale fisheries fishing effort but also allow to know the maximum distance of operation to check potential interferences with the industrial fishing area (usually between around 6 to 10 nmi). We also report that fishermen based in a landing site can fish in another area and even land is catch in a third landing site, thus ecological and fisheries study made from data collected in landing site must be analyzed with care because au bias that such fishermen behavior can introduce in fisheries studies. The analysis of fishermen kinematics allow to improve the estimation of catchability coefficient, the estimation of economics costs, and



allow to set spatial Predator/prey model. Moreover the migration of fisherman from local to regional, which is sensitive in the sub region can be monitored. Conservation authorities can also use this information to check Marine Protected Area frequentation as well as local fishing committees the activities in the protected fishing area (ZPP). We want to underline the interest of such data in fisheries management which can also with little technical improvement play an important role for fishermen security at sea with the implementation of rescue system but also could allow participative data collection (physics and chemical parameters as well as fish sample) from small scale fisheries for manager and fisheries scientist. At the time of miniaturization of electronic component and big data analysis, we recommend the equiping of such system at large scale for small scale fisheries in West Africa.

Keywords: pirogue, fishing effort, fishing fleet, fishing trip, fishing operation, fishermen kinematics, of catchability coefficient, monitoring.



Commission Sous-Régionale des Pêches
Sub-Regional Fisheries Commission



International Conference ICAWA 2016

Extended book of Abstract

THE AWA PROJECT
Ecosystem Approach
to the management
of fisheries and the
marine environment
in West African waters

Cap-Vert

Mauritanie

Sénégal

Gambie

Guinée BISSAU

Guinée

Sierra Leone

ISBN: 978-2-9553602-0-5



Bundesministerium
für Bildung
und Forschung



Institut de Recherche
pour le Développement
FRANCE



Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

Trilateral German-French-African research initiative

EDITED BY:

Patrice BREHMER (IRD-France; Dakar), Babacar BA (CSRP, Sub-Region; Banjul) & Gerd KRAUS (TI, Germany; Hamburg).

TECHNICAL SUPPORT: Marie Madeleine GOMEZ (CSRP), Ndague DIOGOUL (IRD-UCAD).

WITH THE COLLABORATION OF:

Bamol Ali SOW , Alban LAZAR, Heino FOCK, Xavier CAPET, Aka Marcel KOUASSI, Idrissa Lamine BAMY, Osvaldina SILVA, Eric MACHU, Vamara KONE, Moustapha DEME, Didier JOUFFRE, Joern SCHIMDT, Modou THIAW, Suzanne TRAORE, Abdoulaye DIOP, Justine DOSSA, Didier JOUFFRE, Ibrahima DIALLO, Arnaud COMOLET, Zacharie SOHOU, Hamet DIADHOU, Célestin BLE, Rafael ALMAR, Moussa SALL, Abou BAMBA, Dano J.A. ROELVINK, Ibrahima LY, Marie BONNIN , Dienaba Beye TRAORE, Adama MBAYE, Hassane Dedah FALL, Mohamed M'barek O. SOUEILIM.

ISBN: 978-2-9553602-0-5

Sub Regional Fisheries Commission / Commission Sous Régionale des Pêches ©2017

COVER DESIGN: AWA (BMBF – IRD) project

LOGO AND FLYERS: Laurent CORSINI (IRD)

TRANSLATION: Amadou NDIONE (independent)

SPONSORS ICAWA 2016

