Fish and invertebrate identified during the Lesser Antilles Pelagic Ecosystem (LAPE) Ecosystem Survey, 26th April to 22th May 2006.

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ABSTRACT

During the LAPE ecosystem survey, forage fish distribution and abundance have been estimated by acoustics. At points selected from acoustic traces, net sampling, with pelagic trawl or multi-net nekton sampler, has been used to obtain biological specimens of the acoustic target. The samples captured during the survey are introduced with pictures and the most importants identification criteria used. The discribed micronekton is essentially composed of fishes, cephalopods, gastropods and crustaceans. This set of sheets is proposed as a reference collection to help in pelagic top predators stomachs contents identification in the Lesser Antilles.

KEY WORDS: pelagic ecosystem, micronekton, Lesser Antilles.

Poissons et invertébré identifiés pendant la peu d'enquête pélagique d'écosystème de l'écosystème d'Antilles (LAPE), 26 avril au 22 mai 2006.

Lors de la campagne écosystèmique du projet LAPE, la distribution et l'abondance des espèces fourrage des poissons ont été étudiés par méthode acoustique. Á des points déterminé acoustiquement, des échantillonnages au chalut pélagique ou au multi-échantillonneur à trois poches, ont été effectués afin d'obtenir des spécimens biologique des cibles observés au sondeur. Les individus capturés pendant la campagne sont présentés avec des photos et les principaux critères d'identification utilisés. Le micronecton décrit est essentiellement composé de poissons, de céphalopodes, de gastéropodes et de crustacés. L'ensemble de ces fiches est proposé comme collection de référence pour aider à l'identification des contenus stomacaux des grands prédateurs pélagiques dans les Petites Antilles.

MOTS-CLÉS: écosystème pélagique, micronecton, Petites Antilles

INTRODUCTION

The FAO Lesser Antilles Pelagic Ecosystem project completed a multi-disciplinary ecosystem survey in the eastern Caribbean in April and May 2006. This required a large, multi-disciplinary team operating four largely-independent programmes simultaneously; acoustic biomass estimation, biomass sampling, environmental sampling, and a sighting survey. The survey operated in the Lesser Antilles for 26 sea-days between 25 April and 22 May, 2006. This article is about the biological sampling part, especially the identification of forage fishes. At the end of the survey a guide was made in order to help in top predators stomachs contents analysis.

MATERIAL AND METHODS

Sampling procedure

The LAPE Ecosystem Survey was conducted from the Marine Institute research vessel "Celtic Explorer". The area of tracking is ranged from 10 to 19°N and from 56 to 64°W. For the biological sampling, points were chosen most of the time in accordance with acoustic traces in order to identify the acoustic targets. The nets were towed at a mean speed of 6,5 Km/h at depths ranged from 21m to 560m at the top of the trawl.

Celtic Explorer and trawls

The "Celtic Explorer" is a Marine Insititute research vessel in Galway, Ireland. It is also a capable pelagic trawler with a choice of a herring trawl (8m vertical opening) relatively small for a pelagic trawl and a larger mackerel trawl (30m vertical opening), the latter equipped with a three-codend multi-sampler provided by the Institute of Marine Research in Norway. The multi-purpose net admits to sample at three different depths, in a single water tow, without contamination. This ship is also equipped with a suite of oceanographic sampling equipment (CTD, water sampling bottles, fluorometer) and laboratory space. For this survey, the crowsnest was used for a sighting platform for a visual sighting survey of cetaceans and flyingfish.

Samples treatment

During the survey, 96 samples have been done on 44 fishing stations. After each trawling the taxa were immediately sorted, identified and taken in photograph for the first representative of a species, genus or family. Differents

books help in the identification of fishes and invertebrates, they are cited in the bibliography under documents used.

RESULTS

A total of 45357 individuals has been caught divided in 242 differents taxa during the Ecosystem Survey (Table1). The level of identification is variable between the classes, not reaching the species level in many cases. In proportion fishes are the most abundant with 83% of the total catches, cephalopods are second with 10% and crustaceans are third with 7% (Figure2).

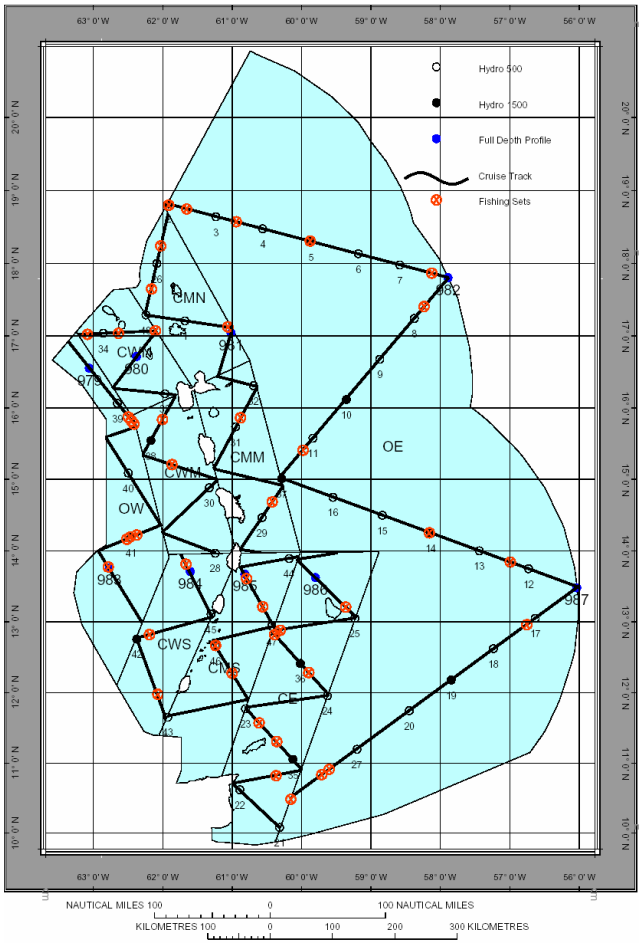

Figure 1. Track line of the LAPE Ecosystem Survey.

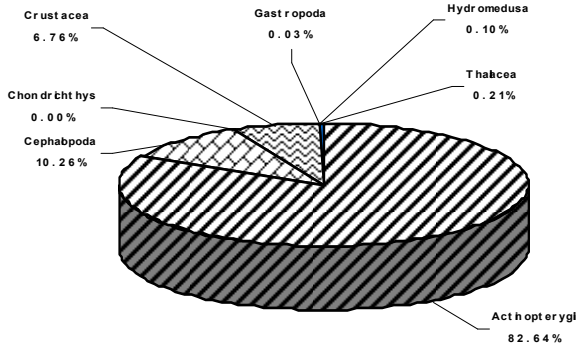

Figure 2. Proportion of classes in number of catches by total catches.

CONCLUSION

The LAPE Ecosystem Survey permitted to add precious data to the existing data of the Ecosystem Modelling Working Group (WG). Among the classes caught during the survey, the *Actinopterygii* one is the more abundant with about 83% of the total catch against 10% for the Cephalopods and 7% for the Crustaceans. These results should not be taken like representative of the density's proportions.

The identification of the individuals was difficult, due to the fact that identification keys are normally based on adults description. In order to help in pelagic top predators stomachs contents identification in the Lesser Antilles a slide show has been created at the end of the survey. This guide is an adaptation of the usual description of the species to the larvae., resulting of several observations made in Martinique at IFREMER and during the survey on the Celtic Explorer.

ACKNOWLEDGEMENTS

The FAO Trust Fund Project GCP/RLA/140/JPN – "Scientific basis for Ecosystem-based Management in the Lesser Antilles including Interactions with Marine Mammals and Other Top Predators" has been operational in the region since late 2003. The participating countries are Antigua and Barbuda, Barbados, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines, and with the active collaboration of Trinidad and Tobago. Complementary studies in the French Islands of Guadeloupe and Martinique and collaborations with other countries in the region will contribute to the broader applicability of project results. This project is also referred to as the Lesser Antilles Pelagic Ecosystem (LAPE) project. Samples treatments were also processed.

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Table 1. List of the taxa caught during the LAPE Ecosystem Survey.

CLASS: Actinopterygii

Order: Unknown
Family: Unknown
UNKNOWN

Order: Anguilliformes
Family: Anguillidae
Anguillidae

Family: Congridae
Bathymyrinae
Congridae
Pseudophichthys splendens

Family: Derichthyidae
Derichthyidae

Family: Heterenchelyidae
Heterenchelyidae

Family: Moringuidae
Moringua edwardsi
Moringuidae

Family: Muraenidae
Muraenidae

Family: Nemichthyidae
Nemichthyidae

Order: Gadiformes
Family: Ophichthidae
Ophichthidae

Family: Serrivomeridae
Serrivomeridae

Family: Synaphobranchidae
Synaphobranchidae

Order: Aulopiformes
Family: Synodontidae
Synodontidae

Order: Beryciformes
Family: Berycidae
Berycidae

Family: Diretmidae
Diretmichthys parini
Diretmidae
Diretmoides pauciradiatus
Diretmoides sp.
Diretmus argenteus

Family: Holocentridae
Holocentridae

Family: Trachichthyidae
Gephyroberyx darwinii

Order: Elopiformes
Family: Unknown
Elopiformes

Family: Bregmacerotidae
Bregmaceros sp.
Bregmacerotidae

Family: Macrouridae
Macrouridae

Family: Melanonidae .
Melanonus zugmayeri

Order: Gasterosteiformes
Family: Fistulariidae
Fistularia petimba
Fistulariidae

Order: Aulopiformes
Family: Evermannellidae
Odontostomops sp.

Family: Notosudidae
Notosudidae
Scopelosaurus sp.

Family: Paralepididae
Lestidiops sp.
Paralepsis sp.

Family: Scopelarchidae
Scopelarchidae
Scopelarchoides sp.
Scopelarchus sp.

Order: Lophiiformes
Family: Unknown
Lophiiformes

Family: Melanocetidae
Melanocetus sp.

Order: Myctophiformes
Family: Unknown
Myctophiformes

Family: Myctophidae
Benthosema sp.
Diaphus sp.
Lampadena sp.
Myctophidae
Myctophum sp.
Symbolophorus sp.

Family: Gempylidae
Gempylus serpens

Family: Neoscopelidae
Neoscopelus sp.
Notolychnus sp.

Order: Osmeriformes
Family: Argentinidae
Argentinidae

Family: Opisthoproctidae
Opisthoproctidae

Family: Mugilidae
Mugilidae

Family: Platytroctidae
Barbantus curvifrons
Platytroctidae

Order: Perciformes
Family: Acanthuridae
Acanthurus bahianus
Acanthurus sp.

Family: Acropomatidae
Acropomatidae

Family: Ariommatidae
Ariomma regulus
Ariommatidae

Order: Lampridiformes
Family: Lophotidae
Lophotidae

Family: Radiicephalidae
Radiicephalus elongatus

Order: Perciformes
Family: Carangidae
Decapterus macarellus
Decapterus sp.
Decapterus tabl
Naucrates ductor
Selar crumenophthalmus
Selene sp.

Family: Chaetodontidae
Chaetodon ocellatus
Chaetodontidae

Family: Chiasmodontidae
Chiasmodontidae

Family: Epigonidae
Epigonus macrops
Lepidocybium flavobrunneum
Nealotus tripes
Nesiarchus nasutus
Promethichthys Prometheus

Family: Lutjanidae
Lutjanus sp.
Lutjanus vivanus
Ocyurus chrysurus

Family: Nomeidae
Cubiceps gracilaris
Cubiceps sp.
Nomeidae
Nomeus gronovii
Psenes arafurensis
Psenes pellucidus

Family: Polynemidae
Polydactylus sp.

Family: Priacanthidae
Cookeolus japonicus
Heteropriacanthus cruentatus
Priacanthus arenatus

Family: Scombridae
Acanthocybium solandri
Auxis thazard thazard
Euthynnus alletteratus
Scombrolabrax heterolepis
Thunnus atlanticus

Family: Bramidae
Brama sp.
Eumegistus sp.

Family: Carangidae
Alectis ciliaris
Carangidae
Caranx crysos
Caranx sp.

Order: Perciformes
Family: Scombrolabracidae
Scombridae

Family: Sparidae
Sparidae
Stenotomus caprinus

Family: Sphyraenidae
Sphyraena barracuda
Sphyraena sp.

Family: Trichiuridae
Benthodesmus nasutus
Benthodesmus simonyi
Benthodesmus sp.
Benthodesmus tenuis
Trichiuridae
Trichiurus lepturus

Family: Xiphiidae
Xiphias gladius

Order: Pleuronectiformes
Family: Achiridae
Achiridae

Family: Bothidae
Bothidae

Order: Polymixiiformes
Family: Polymixiidae
Polymixia nobilis
Polymixia sp.

Order: Scorpaeniformes
Family: Unknown
Scorpaeniformes

Family: Dactylopteridae
Dactylopteridae
Dactylopterus volitans

Family: Peristediidae
Peristedion imberbe
Peristedion sp.

Family: Scorpaenidae
Scorpaenidae

Family: Stomiidae
Stomias sp.
Stomiidae

Order: Stephanoberyciformes
Family: Melamphaidae
Melamphaes polylepis

Order: Stomiiformes
Family: Astronesthidae
Astronesthes sp.
Astronesthidae
Borostomias sp.
Heterophotus ophistoma
Neonesthes sp.

Family: Chauliodontidae
Chauliodontidae
Chauliodus sloani
Chauliodus sp
.
Family: Gonostomatidae
Bathylagidae
Bonapartia sp.
Diplophos sp.
Gonostomatidae
Manducus maderensis

Family: Idiacanthidae
Idiacanthus fasciola

Family: Malacosteidae
Aristostomias sp
Malacosteidae
Photostomias sp.

Family: Melanostomiidae
Bathophilus sp.
Eustomias sp.
Leptostomias sp.
Polymixiidae
Melanostomias sp.
Photonectes sp.

Family: Phosichthyidae
Phosichthyidae
Pollichthys mauli
Pollichthys sp.
Vinciguerria sp

Family: Sternoptychidae
Argyripnus sp.
Argyropelecus aculeatus
Argyropelecus affinis
Argyropelecus hemigymnus
Argyropelecus sladeni
Argyropelecus sp.
Maurolicus sp.
Polyipnus sp.
Sternoptyx sp.

Order: Tetraodontiformes
Family: Monacanthidae
Aluterus monoceros
Aluterus scriptus
Cantherines macrocerus
Cantherines pullus

Monacanthidae
Monocanthus ciliatus
Monocanthus tuckeri
Stephanolepis setifer
Stephanolepis sp.
Family: Grammacolepidae
Xenolepidichthys dalgleishi
Family: Ostraciidae
Acanthostracion polygonius
Acanthostracion sp.
Ostraciidae
Rhinesomus sp
Family: Tetraodontidae
Lagocephalus lagocephalus
Sphoeroides pachygaster
Sphoeroides sp.

Order: Zeiforme
Family: Caproidae
Antigonia capros

CLASS: Chondrichthys

Order: Rajiformes
Family: Dasyatidae
Dasyatis say

CLASS: Cephalopoda

Order: Decapodiformes
Family: Unknown
Decapodiformes
Family: Bathyteuthidae
Bathyteuthis abyssicola
Family: Chiroteuthidae
Chiroteuthis sp.
Family: Chtenopterygidae
Chtenopterygidae
Family: Cranchiidae
Cranchiidae
Family: Lycoteuthidae
Lycoteuthis sp.
Lycoteuthis springeri
Selenoteuthis scintillans
Family: Octopoteuthidae
Octopoteuthis sp.
Family: Ommastrephidae
Hyaloteuthis pelagica
Ommastrephes bartramii
Ommastrephes sp.
Ommastrephidae
Ornithoteuthis antillarum
Family: Enoploteuthidae
Abralia sp.
Abraliopsis gilchristi
Enoploteuthis sp.
Pterygioteuthis giardi
Family: Histioteuthidae
Histioteuthis dofleini
Histioteuthis sp.
Family: Loliginidae
Loliginidae
Loligo plei
Family: Onycoteuthidae
Onycoteuthidae
Family: Ornychoteuthidae
Onycoteuthis sp.
Family: Sepiolidae
Semirossia sp.
Sepiola sp.
Sepiolidae
Family: Spirulidae
Spirula spirula
Family: Thysanoteuthidae
Thysanoteuthis rhombus

CLASS: Crustacea

Order: Amphipoda
Family: Unknown
Amphipoda
Orchomenella sp.
Family: Hyperiidae
Hyperiidae
Family: Phronimidae
Phronimidae
Family: Phrosinidae
Phrosina semilunata
Order: Euphausiacea
Family: Unknown
Euphausiacea
Order: Mysidacea
Family: Lophogastridae
Gnathophausia ingens
Order: Palinura
Family: Unknown
Palinura

Family: Platyscelidae
Platyscelidae
Platyscelus armatus

Order: Brachyura
Family: Unknown
Brachyura

Order: Caridea
Family: Oplophoridae
Nososstomus caprinus
Notostomus gibbosus
Oplophoridae

Order: Decapoda
Family: Caridea
Caridea

Family: Sergestidae
Sergestes edwardsii
Sergestidae

CLASS: Gastropoda

Order: Heteropoda
Family: Atlantidae
Atlantidae

CLASS: Hydromedusa

Order: Unknown
Family: Unknown
Cunina sp.

Order: Hydromedusae
Family: Unknown
Hydromedusae

CLASS: Thaliacea

Order: Salpida
Family: Tunicates
Tunicates

Family: Palinuridae
Palinuridae

Order: Peneidea
Family: Penaeidae
Parapenaeus longirostris
Penaeidae

Order: Stenopodidea
Family: Stenopodidae
Stenopodidae

Order: Stomatopoda
Family: Unknown
Stomatopoda

Order: Pteropoda
Family: Cavoliniidae
Cavolinia gibbosa forma
Cavolinia gibbosa forma flava
Cavolinia tridentata forma
Cavolinia uncinata uncinata

Order: Capitata
Family: Corymorphidae
Euphysora sp.

Order: Semaeostomae
Family: Ulmaridae
Aurelia aurita