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Semblanzas Ictiológicas
Juan Manuel Molina

Hugo L. López
y
Justina Ponte Gómez

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Semblanzas Ictiológicas

Juan Manuel Molina

Juan Manuel Molina junto a María Emilia Croce, su mujer, en el parque de la ciudad de Québec, Canadá, 2011

Hugo L. López y Justina Ponte Gómez

ProBiota
División Zoología Vertebrados
Museo de La Plata
FCNyM, UNLP

Abril de 2014

Imagen de Tapa
Juan Manuel Molina en Punta Bermeja, Golfo San Matías, Río Negro, 2014

El tiempo acaso no exista. Es posible que no pase y sólo pasemos nosotros.

Tulio Carella

Cinco minutos bastan para soñar toda una vida, así de relativo es el tiempo.

Mario Benedetti

Semblanzas Ictiológicas

A través de esta serie intentaremos conocer diferentes facetas personales de los integrantes de nuestra "comunidad".

El cuestionario, además de su principal objetivo, con sus respuestas quizás nos ayude a encontrar entre nosotros puntos en común que vayan más allá de nuestros temas de trabajo y sea un aporte a futuros estudios históricos.

Esperamos que esta iniciativa pueda ser otro nexo entre los ictiólogos de la región, ya que consideramos que el resultado general trascendería nuestras fronteras.

Hugo L. López

Nombre y apellido completos: Juan Manuel Molina

Lugar de nacimiento: Bahía Blanca, Buenos Aires, Argentina

Lugar, provincia y país de residencia: Bahía Blanca, Buenos Aires, Argentina

Título máximo, Facultad y Universidad: Doctor en Ciencias Biológicas, Departamento de Biología, Bioquímica y Farmacia, Universidad Nacional del Sur

Posición laboral: Becario Posdoctoral del Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET)

Lugar de trabajo: Departamento de Biología, Bioquímica y Farmacia, Universidad Nacional del Sur (UNS)

Especialidad o línea de trabajo: Ecología y Biología de peces marinos

Correo electrónico: jmmolina@criba.edu.ar

Cuestionario

-**Un libro**: *Fundación y Tierra*, Isaac Asimov.
-**Una película**: *Star Wars*, ¡cualquiera de la saga!
-**Un CD** : *Desastre Climático*
-**Un artista**: Leonardo da Vinci
-**Un deporte**: arquería
-**Un color**: azul
-**Una comida**: ñoquis
-**Un animal**: sapo
-**Una palabra**: cualquiera
-**Un número**: 18
-**Una imagen**: una tortuga caminando por la ruta
-**Un lugar**: las cataratas de Iguazú
-**Una estación del año**: primavera
-**Un nombre**: Felipe
-**Un hombre**: Aristóteles
-**Una mujer**: mi abuela
-**Un ictiólogo del pasado:** Dra. Berta Cousseau
-**Un Ictiólogo del presente:** Dra. Andrea López Cazorla
-**Un personaje de ficción**: Tumitak de los corredores
-**Un superhéroe**: Batman

María Emilia Croce y Juan Manuel Molina durante un viaje de estudio a Sierra de la Ventana, Buenos Aires, Argentina, 2005

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Trophic ecology of *Mustelus schmitti* (Springer, 1939) in a nursery area of northern Patagonia

Juan Manuel Molina *, Andrea López Cazorla

Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), San Juan 670, Bahía Blanca, Buenos Aires, Argentina
Universidad Nacional del Sur (UNS), Departamento de Biología, Bioquímica y Farmacia, San Juan 670, Bahía Blanca, Buenos Aires, Argentina

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ABSTRACT

Mustelus schmitti is an endangered endemic shark of the southwest Atlantic, and an important economical resource in Argentina, Brazil and Uruguay. The objective of this study was to describe the trophic ecology of *M. schmitti* in Anegada Bay, its feeding strategy and diet composition, along with the possible dietary shifts, due to season, sex, ontogeny and the different geographical features of the bay. Our results show that *M. schmitti* is a carnivorous opportunistic predator, feeding on a variety of benthic invertebrates. The diet presented seasonal and ontogenetic variations, while no differences in diet composition were observed between sexes or the different sampling sites. This species behave as a generalize feeder, with a wide trophic spectrum and a diverse diet.

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1. Introduction

The smoothhound, *Mustelus schmitti* (Springer, 1939) is a small shark of the Triakidae family, with a maximum total length of 110 cm. This species is endemic to the Southwest Atlantic, from the south of Brazil to Argentine's Patagonia (22° S to 47°45′ S), and is known to migrate seasonally in large numbers between wintering grounds in south Brazil and summer grounds in Argentina (Figueiredo, 1977; Vooren, 1997). The species occurs from coastal waters to 120 m depth, at bottom temperatures of 5.5 to 11.0 °C and surfaces temperatures of 8 to 11.7 °C (Menni, 1985). In Argentina, it is more abundant in littoral waters of Buenos Aires province and northern Patagonia, where salinity is higher than 22.44 psu (Massa et al., 2004).

This species is an important economical resource in Argentina, Brazil and Uruguay, and is also exported to England and China (Massa and Lasta, 2000). The smoothhound is fished by both industrial and artisanal fishing fleets. From 1994 to 2002 the reported captures were around 6.000 t per year for the coastal area of Buenos Aires province. Since 2006, the reported captures have increased, reaching 9.000 t in 2008 (Fernández Aráoz et al., 2009; Massa et al., 2010).

The exploitation of this species throughout its distribution range, has lead to recent declines in its populations, despite Maximum Permitted Catch regulations established by the Secretaria de Agricultura, Ganaderia, Pesca y Alimentacion (SAGPyA) in Argentina and the Dirección Nacional de Recursos Acuaticos (DINARA) in Uruguay (Massa et al., 2004). *M. schmitti* is currently considered vulnerable in these two countries by the International Union for Conservation of Nature (IUCN). The species is categorized as critically endangered in Brazil, given observed declines of 85% of the winter migrating population, due to boundless fishing rates, probable extirpation of a local breeding population and continuing intense fishing. The IUCN has assigned an overall global assessment of endangered; that summarizes the situation throughout the species' range. This is of great cause for concern, given that market demand is increasing and fisheries are still exploiting the resource (Massa et al., 2010).

Most shark species have geographically discrete nurseries, which are usually located in highly productive, shallow waters (e.g. coastal marshes and estuaries), where the young can find abundant food (Castro, 1987). These areas are often the shallower parts of the population's range (Springer, 1967). In Argentine waters, nursery areas for *M. schmitti* were reported in Samborombón Bay (Cousseau, 1982, 1986), Bahia Blanca estuary (Lopez Cazorla, 1987) and Anegada Bay (Colautti et al., 2010), which are located in Buenos Aires province, and in Engaño Bay (Van der Molen et al., 1998) on north Patagonia. However, additional definition and criteria used to identify nursery areas have been suggested by Heupel et al. (2007) and Knip et al. (2010). Regardless of the definition, protection of these nursery areas, and of the breeding females, juveniles and neonates within, is vital for the species conservation (Heupel et al., 2007; Knip et al., 2010; Massa et al., 2010; Simpfendorfer and Milward, 1993).

While sharks are susceptible to overfishing (Hall, 1999), small coastal sharks have a greater recovery potential (Stevens et al., 2000) than their larger counterparts. Therefore it is theoretically possible to

* Corresponding author at: Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), San Juan 670, Bahía Blanca, Buenos Aires, Argentina. Tel.: +54 291 154709563.
E-mail address: jmmolina@criba.edu.ar (J.M. Molina).

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REVIEW

Trends in shark bycatch research: current status and research needs

Juan M. Molina · Steven J. Cooke

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Abstract Over the last few decades, much effort has been devoted towards quantifying and reducing bycatch in marine fisheries. Of late, there has been a particular focus on sharks given that bycatch is a frequently listed threat for sharks on the International Union for the Conservation of Nature Red List. However, currently there are no quantitative reviews or syntheses that explore the issue of shark bycatch globally which is problematic given that such a synthesis could inform conservation actions and identify pressing research gaps. We performed a qualitative and quantitative survey of the peer-reviewed literature to characterize trends in shark bycatch research with a particular goal of identifying research needs and opportunities. Using a structured literature review we identified 103 papers that met our search criteria, with the first one published in 1993. Early research efforts focused on documenting the scope of bycatch (i.e., determining that sharks were indeed captured as bycatch), but more recently there have been increased efforts devoted to developing and evaluating bycatch reduction strategies for sharks. Research activity was most common in the North Atlantic (~40 % of the total articles analysed) with comparatively less research in other areas such as the Indo-Pacific region where shark bycatch is regarded as particularly common and problematic. Most studies were observational with comparatively fewer experimental and modeling studies, and even fewer that combined research approaches. Gear modifications (e.g., hook size and type for long lines, net size and mesh design for nets) were the most commonly evaluated strategy for reducing shark bycatch; however, development and use of techniques like repellents, or seasonal area closures, or a combination of strategies, offer interesting possibilities that require further study. In addition, although many sharks are discarded, little is known about post-release survival or sub-lethal consequences of fisheries interactions, or evaluations of different fish handling strategies, making it difficult to quantify the true cost of bycatch or to recommend handling strategies to fishers. Although there are some inherent challenges with developing and testing shark bycatch reduction strategies, there is an urgent need to do so and this would be best achieved through interdisciplinary research that spans field, laboratory, and modeling realms.

J. M. Molina (✉)
Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Buenos Aires, Argentina
e-mail: ichtyostega@gmail.com

J. M. Molina
Departamento de Biología Bioquímica y Farmacia, Universidad Nacional del Sur, Bahía Blanca, Buenos Aires, Argentina

S. J. Cooke
Fish Ecology and Conservation Physiology Laboratory, Department of Biology, Institute of Environmental Science, Carleton University, Ottawa, ON, Canada

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The artisanal fishery of *Cynoscion guatucupa* in Argentina: Exploring the possible causes of the collapse in Bahía Blanca estuary

Andrea Lopez Cazorla [a,b,*], Juan Manuel Molina [a,b], Claudio Ruarte [c]

[a] Departamento de Biología, Bioquímica y Farmacia, Universidad Nacional del Sur, San Juan 670, B8000ICJ Bahía Blanca, Argentina
[b] Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina
[c] Instituto Nacional de Investigación y Desarrollo Pesquero, C.C. 175, B7602HSA Mar del Plata, Argentina

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ABSTRACT

Cynoscion guatucupa Cuvier 1829 is a migratory pelagic fish species, which has a wide geographical distribution. It is the most important fishing resource for local communities in Bahía Blanca estuary and has been captured by artisanal fishermen since the 1900s. The industrial fleet has been fishing this species in the coastal area of Buenos Aires province since the 1950s, and, since 1970, landings have increased sharply. Between 2000 and 2004, the artisanal fishery in the estuarine waters of Bahía Blanca collapsed. Variations in total landings of the artisanal fleet might have arisen from the environmental variables within the estuary, fishing activity in the surrounding sea region, local pressure within the estuary and/or several other variables. Our results suggest that neither oceanographic parameters nor local pressure seem to have influenced the artisanal fishery of *C. guatucupa* in the estuarine region. Instead, this fishery seems to have been partially influenced by the increasing fishing pressure exerted by the industrial fishing fleet operating in open waters around the estuary. This study emphasizes the need to take into account fisheries data from both the estuarine environment and the surrounding sea region, particularly when designing management plans for the sustainable use of migrating fish resources.

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1. Introduction

The striped weakfish, *Cynoscion guatucupa* Cuvier 1829, is a pelagic fish species, which has a wide geographical distribution, extending from Río de Janeiro (22°S) in Brazil, to the San Matías Gulf (43°S), in Argentina (Cousseau and Perrotta, 1998). This fish feeds on crustaceans on its early stages, and its diet shifts to pelagic fish as it develops into adulthood (Lopez Cazorla, 1996; Sardiña and Lopez Cazorla, 2005). *C. guatucupa* is a commercially important sciaenid found in estuarine, coastal and marine waters of Argentina, Uruguay and Brazil. Adults perform seasonal migrations, moving northward between autumn and spring (April–September), from the fishing grounds of Uruguay and Argentina to the coastal waters of southern Brazil and back southward in summer (Villwock de Miranda and Haimovici, 2007). The influence of oceanographic parameters is well documented for fish and known to influence the distribution and abundance patterns (Andrade and Garcia Eiras, 1999; Jaureguizar et al., 2003; Sunye and Servain, 1998). Lopez Cazorla (1996) reports such influence in the spawning movements of *C. guatucupa*, associating it with changes in temperature and salinity. Spawning occurs outside estuaries along the Argentinean coast, from spring to mid-autumn (Cassia, 1986; Lopez Cazorla, 2000). Small juveniles recruited since late spring in coastal waters (less than 25 m depth) move to deeper waters (25–50 m) in late autumn, when they reach a mean total length of 9.8 cm (age 0+). They remain there for the next 1–2 years before joining the adult stock's seasonal movements (Haimovici et al., 1996; Lopez Cazorla, 2000; Sardiña and Lopez Cazorla, 2005). The total length of adult fish ranges from 34 to 63 cm and the ages range from 3 to 23 years (Lopez Cazorla, 2000; Ruarte and Sáez, 2008).

The northern Argentine continental shelf (34–41°S) is a broad, shallow system between the coastal and the shelf break (200 m isobath). The homogeneous coastal zone is located south of 38°S (Lucas et al., 2005) and comprises the El Rincón area (ERA) (39 – 41°S). Bahía Blanca estuary (BBE) is located in the coastal region of the mentioned area, at 39°S (Fig. 1). Sciaenid fishes are dominant in these waters, *C. guatucupa* being the most important fishing resource, in social and economic terms, in these areas (Carozza and Fernandez Araoz, 2009; Lopez Cazorla, 2004).

Cynoscion guatucupa has been fished between 30°S and 41°S (Arena and Gamarra, 2000; Ruarte and Aubone, 2004; Vasconcellos et al., 2005; Yesaki and Bager, 1975). The annual commercial landings of the Argentinean fleet reached 5000 t in the early 1970's. After that, landings increased sharply to 20,000 – 48,000 t (Villwock de Miranda and Haimovici, 2007). In the decade between 1995 and 2004 total landings were on average 36,154 t, of which 28% were caught by the coastal bottom trawl and gill-net fisheries in South Brazil and 72% by the coastal otter trawl fishery of Uruguay and Argentina (Villwock de Miranda and Haimovici, 2007). The northern stock (from 35°S to 41°S) of Argentinean hake (*Merluccius hubbsi*, Marini

* Corresponding author. Tel.: +54 291 4595100x2435; fax: +54 291 4595130.
E-mail address: acazorla@criba.edu.ar (A. Lopez Cazorla).

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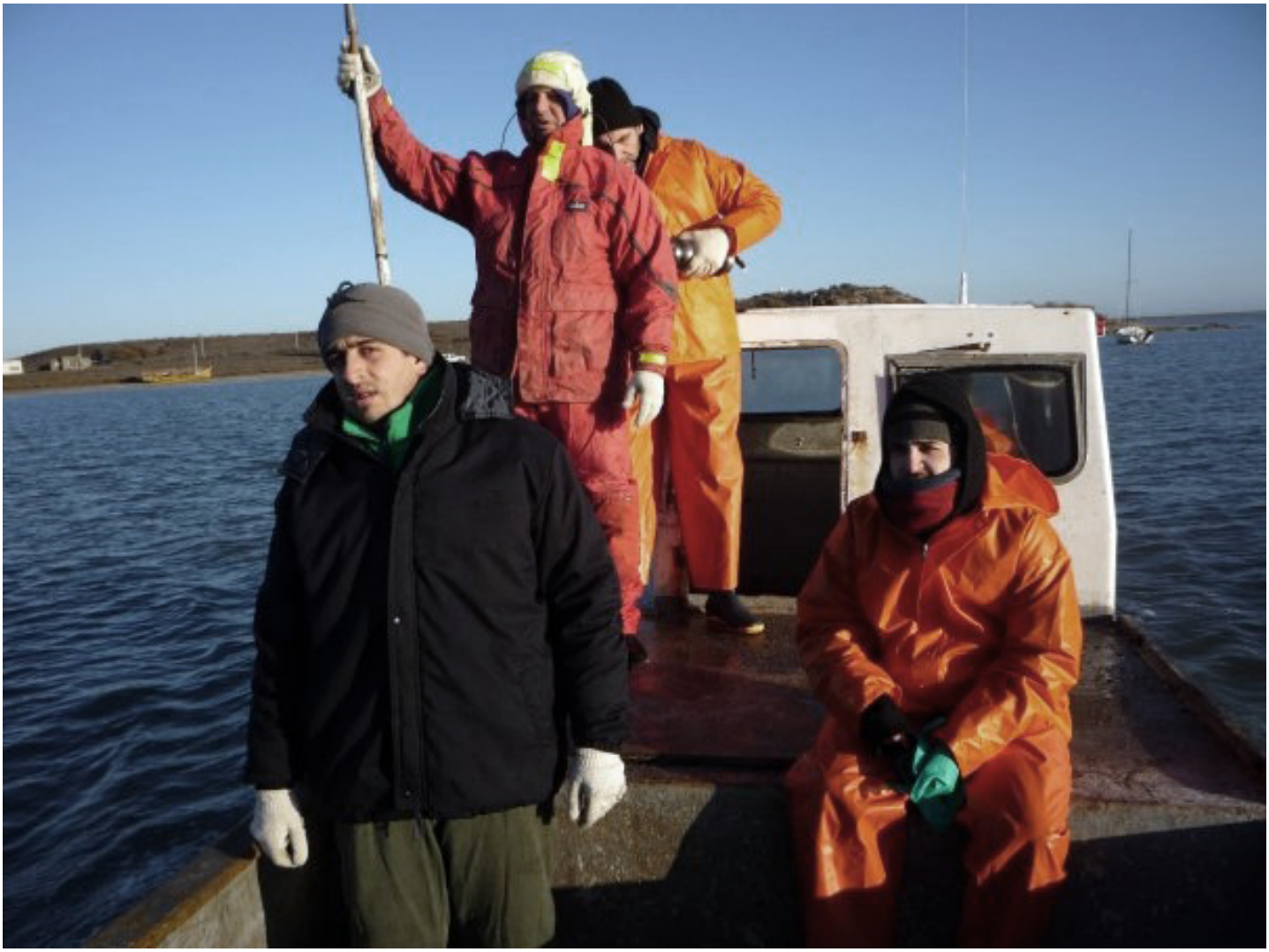

Muestreo de peces en Bahía San Blas en la lancha de un baqueano de la zona, Carmen de Patagones, Buenos Aires, 2008
De izquierda a derecha: Matías, Darío Colauti, Horacio Oñatibia y Juan Manuel Molina

El paisaje en la Columbia Británica, Canadá, 2011
Islote que se descubre cuando el embalse, de titánicas proporciones, está a niveles bajos, el cual cuenta el relato del despeje que fue necesario para la construcción de la represa hidroeléctrica
Como pasante realizó el trabajo de campo encargado al laboratorio del Dr. Steven Cooke: colocación de transmisores acústicos en truchas toro en el embalse artificial, para evaluar sus patrones de movimiento

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Museo de La Plata
Facultad de Ciencias Naturales y Museo, UNLP
Paseo del Bosque s/n, 1900 La Plata, Argentina

Directores

Dr. Hugo L. López
hlopez@fcnym.unlp.edu.ar

Dr. Jorge V. Crisci
crisci@fcnym.unlp.edu.ar

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Justina Ponte Gómez
División Zoología Vertebrados
Museo de La Plata
FCNyM, UNLP
jpg_47@yahoo.com.mx

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