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Semblanzas Ictiológicas

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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 objet ivo, 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

Semblanzas Ictiológicas

María Eugenia Moreira

Pescando de noche. CAV 09-10. Bahía Almirantazgo, Isla 25 de Mayo, Islas Shetland del Sur, Antártida.

Hugo L. López y Julia Rouaux

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Imagen de Tapa
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Cuestionario

Un libro: El libro de los abrazos, Eduardo Galeano.
Una película: La guerra de las galaxias
Un CD : varios de Bob Marley
Un artista: Pablo Picasso
Un deporte: snorkel
Un color: verde
Una comida: tacos
Un animal: delfín
Una palabra: amor
Un número: 22
Una imagen: las tardes de playa con mis abuelos
Un lugar: San Luis, Uruguay
Una estación del año: verano
Un nombre: Maite
Un hombre: Jorge Moreira, mi padre
Una mujer: Silvia Tranquillini, mi madre
Un ictiólogo/a del pasado: Raul Ringuelet
Un ictiólogo/a del presente: Joseph Eastman
Un personaje de ficción: Sheldon Cooper
Un superhéroe: Iron Man

Acto de Final de cursada de la carrera de grado, Diciembre 2003 - Museo de La Plata, FCNyM. Junto a la Dra. Mariana Juáres.

Primera campaña antártica. Diciembre 2007. Base Carlini, Isla 25 de Mayo, Islas Shetland del Sur, Antártida.

Diseccionando en el laboratorio. CAV12-13. Base Carlini, Isla 25 de Mayo, Islas Shetland del Sur, Antártida.

CAV15-16 Grupo de Ictiología del IAA, junto a el Dr. Esteban Barrera Oro y el Sr. Carlos Bellisio. Base Carlini, Isla 25 de Mayo, Islas Shetland del Sur, Antártida.

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ORIGINAL PAPER

Phenotypic plasticity in the Antarctic notothenioid fish *Trematomus newnesi*: a guide to the identification of typical, large mouth and intermediate morphs

Esteban Barrera-Oro · Joseph T. Eastman · Eugenia Moreira

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Abstract *Trematomus newnesi* is a common inshore species with a circum-Antarctic distribution. It provides the only known example of phenotypic plasticity in Antarctic notothenioid fish, existing as populations of typical, large mouth and intermediate morphs that can be difficult to identify. Using specimens from both Potter Cove, King George/25 de Mayo Island, and from McMurdo Sound, we found that the morphometric measurements gape width/head length (HL), upper jaw length/HL and, to a lesser extent, orbit diameter/HL reliably separated the morphs. For use in a key, we converted the ratios into the qualitative characters head shape, head width and upper jaw length relative to middle of the eye. To increase the reliability of the key, we also assessed intra-morph variability in these characters. The key is supplemented with colour photographs illustrating the distinctive features for separation of the morphs. We discovered that, in the case of the specimens from Potter Cove, each morph had a distinct pattern of colouration: typical—trunk blotched, with yellow or orange-brown predominating especially on pectoral and caudal fins; large mouth—trunk blotched, with green predominating especially in pectoral and opercular regions; and intermediate—trunk less blotched, with homogeneous dark brown-grey on trunk, pectoral and caudal fins. We also discuss the ecological implications of colour in the morphs.

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Keywords Phenotypic plasticity · Notothenioidei · Ecology · McMurdo Sound · Potter Cove

Introduction

The circum-Antarctic notothenioid fish *Trematomus newnesi* Boulenger 1902 is commonly found in shallow inshore waters from 20–25 m deep on rocky bottoms with macroalgae beds (DeWitt et al. 1990; Barrera-Oro 2002). It also may be found farther offshore on the shelf to depths of 450 m (Tiedtke and Kock 1989). Its accessibility and local abundance have made it a frequent subject for both ecological studies (Radtke et al. 1989; Vacchi and La Mesa 1995; La Mesa et al. 2000; Barrera-Oro and Piacentino 2007) and physiological/biochemical/genetic work (D'Avino et al. 1994; Hazel and Sidell 2004; Van Houdt et al. 2006). It is unusual among notothenioids in exhibiting considerable phenotypic plasticity and exists as "typical" and "large mouth" morphs (Eastman and DeVries 1997) as well as a series of "intermediate" morphs (Piacentino and Barrera-Oro 2009). This example of phenotypic plasticity is especially perplexing because it has not yet been linked with divergence in habitat or diet, and thus the ecological significance of the morphism in *T. newnesi* is unclear. For example, Eastman and Barrera-Oro (2010) found that, in spite of the distinct external appearance and possession of a relatively heavier skeleton in the large mouth morph, there were no significant differences in measurements of buoyancy among any of the morphs and therefore no support for the hypothesis that the large mouth morph is less buoyant/more benthic than the typical semipelagic morph.

The identification of the typical and the large mouth morphs of *T. newnesi* may be difficult and is confounded by the presence of intermediate forms. At McMurdo Sound,

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SHORT NOTE

Age validation of juvenile *Notothenia rossii* at Potter Cove, South Shetland Islands, using mark-recapture data

Eugenia Moreira · Esteban Barrera-Oro · Mario La Mesa

Received: 6 June 2013 / Revised: 8 August 2013 / Accepted: 10 August 2013 / Published online: 22 August 2013

Abstract Among all validation methods of age determination in fish, release of known age and marked specimens gives the most reliable information. We carried out a tag-recapture experiment on *Notothenia rossii* at Potter Cove, to validate, for first time for this species using this method, the principle of annual deposition of an annulus in scales and otoliths. Of 132 juvenile specimens (TL = 22.1–38.1 cm) tagged and released in successive years from 2004 to 2010, 7 were recaptured at the same site after periods of 1–13 months. In scales of five specimens recovered after 10–13 months, one extra annulus was laid down, exhibiting an additional winter zone of closely spaced sclerites. Consistently, the same analysis in two individuals marked and recaptured during the same summer, after 1–3 months at liberty, did not show the deposition of an additional annulus. All the fish tagged or recaptured during the experiment period (December to March) showed in their scales an edge zone of widely spaced sclerites, in agreement with the known pattern of growth in summer. Likewise, an analysis in selected specimens showed good consistency between the numbers of sclerites deposited in scales and the time of fish release. The comparative analysis between scales taken at recapture and otoliths of the same individual allowed a simultaneous counting of the annuli with complete correspondence. The growth in length of fish ranged from 0.5 to 6.1 cm, depending on the time of release.

Keywords Antarctic coastal fish · Scales–otoliths · Notothenioidei

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Introduction

The assessment of the dynamics of fish populations relies heavily on the accuracy of age determinations, basically used for the estimation of mortality and growth. Inaccurate estimates of these parameters can lead to the mismanagement of a fishery, and therefore, age readings must be supported by consistent validation methods. A range of techniques have been utilized in Antarctic fish to obtain age estimates from rhythmic patterns revealed in bony structures like scales and otoliths, but most ageing data have not been validated (North 1988; Kock 1990; White 1991; La Mesa and Vacchi 2001; Barrera Oro et al. 2010; among others).

The marbled notothenia, *Notothenia rossii* (Richardson 1844), is a circum-Antarctic species, widely distributed in coastal waters of the Scotia Arc, around the Kerguelen, Crozet, Marion, Prince Edward, Macquarie, Heard and Macdonald Islands, and Ob and Lena Banks (Gon and Heemstra 1990). It was the first Antarctic fish depleted by the industrial fisheries in the late 1970s (Kock 1992). Nevertheless, more than two decades since the prohibition of this fishery in the Southern Ocean in 1991, the stock condition of *N. rossii* around the South Shetland Islands is still uncertain (Barrera Oro and Marschoff 2007; Marschoff et al. 2012). An updated assessment of its population dynamics is essential for the appropriate monitoring of its recovery in the region.

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ORIGINAL PAPER

Dietary overlap among early juvenile stages in an Antarctic notothenioid fish assemblage at Potter Cove, South Shetland Islands

Eugenia Moreira · Mariana Juáres · Esteban Barrera-Oro

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Abstract To date, studies of food overlap in Antarctic fish have been performed on a mixture of late juvenile and adult stages, leaving the young immature specimens (TL $\leq$ 10 cm) practically unexplored. We studied diet overlap and potential competition among early juvenile individuals in a coastal notothenioid community at Potter Cove, by analysing the stomach contents of 225 fish of 5 species collected in the summer of 2009–2010. We used frequency of occurrence (*F* %) and the coefficient "*Q*" for diet evaluation and the method of Tyler and the similarity index "*S*" for food overlap. Amphipods of the suborder Gammaridea were the main ($Q > 2.900$) and most frequent (% *F*) prey for all species, although *Notothenia coriiceps* also consumed gastropods of the family Littorinidae, mostly *Laevilitorina antarctica*. Secondary prey were algae for *Notothenia rossii* and *N. coriiceps*, calanoid (pelagic) and harpacticoid (benthic) copepods for *Trematomus newnesi* and the latter copepods and isopods of the family Munnidae for *Lepidonotothen nudifrons*. The reoccurrence of prey among fish species was 39.6 % and food overlap between 90 % of species pairs was under 58 %. Because similarly low values of diet overlap were reported for intermediate/advanced juveniles and adults of the same species at the same site, we conclude that there is no difference in the degree of interspecific food overlap and therefore potential competition between the immature and mature fraction of the fish community. Food competition is avoided by resource partitioning along a depth gradient or by different prey species.

Keywords Juvenile fish · Food competition · Trophic ecology · Antarctic ecosystem

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Introduction

As both predators and prey, fish occupy the intermediate trophic level in the food webs of the Southern Ocean (Kock et al. 2012). The dominant and endemic coastal demersal group, the Antarctic Notothenioidei, are the main predators of benthos, feeding on virtually all the organisms present below their own trophic level from algae to fish, as well as on zooplankton in the water column (Barrera-Oro 2002). They have developed a wide range of feeding strategies, which allow them to utilise food resources in a variety of habitats (Gröhsler 1994), thus reducing dietary overlap. As food overlap may be reflected in competition under conditions of limited resource availability (Odum 1971), the utilisation of such strategies may help to diminish interspecific competition.

Studies of food overlap in Antarctic fish are limited. A few studies are focused on pairs of species in the Ross Sea (Vacchi et al. 1994; La Mesa et al. 1997) and the South Shetland Islands (Moreno and Bahamonde 1975), while others analyse food overlap between multiple species in fish assemblages of the western Antarctic Peninsula and the South Shetlands (Rakusa-Suszczewski and Piasek 1973;

Imagen de Cierre

Sello postal de homenaje a Luciano Honorato Valette (1880-1957), Serie *Pioneros Antárticos.* Argentina, 2008.

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