

A NOTE ON THE OPISTHOBRANCHS
OF PARQUE NACIONAL DE COIBA, PANAMÁ
(TROPICAL EASTERN PACIFIC)

ALICIA HERMOSILLO

Universidad de Guadalajara, Centro Universitario de Ciencias Biológicas y Agropecuarias
Las Agujas, Zapopan, Jalisco, México
E-mail: alicia_hg@prodigy.net.mx

YOLANDA E. CAMACHO-GARCÍA

Museo de Zoología, Escuela de Biología, Universidad de Costa Rica
San Pedro de Montes de Oca, San José, Costa Rica
E-mail: ycamacho@inbio.ac.cr

Background

Hermosillo (2004) published a list of the 75 species of opisthobranch mollusks she recorded at Parque Nacional de Coiba during a Smithsonian Tropical Research Institute expedition in May 2003 aboard the R/V Urracá. According to Hermosillo (2004), the island of Coiba and all its surrounding islands and islets were declared a national park in 1991 and is now one of the most extensive parks in the world with 53,582 hectares of land surface and 216,543 hectares of marine sanctuaries. One very important update is that diligent efforts of Dr. Todd Capson, Dr. Alicia Ibañez, Dr. Ross Robertson, Dr. Héctor Guzmán, Mr. Joe Pigozzi and other Smithsonian Tropical Research Institute scientists resulted in the inclusion of Parque Nacional de Coiba in UNESCO World Heritage Status in 2005. Hermosillo (2004) reported 22 species that were range extensions, not previously known for Panamá or anywhere else south of Panamá and 10 were undescribed species. Currently, all of these taxa are in the process of being described or are in press.

The present paper contains the findings from a parallel STRI project of Camacho-García that combined with data from Hermosillo (2004) increases the total number of opisthobranch species reported in the Park to 89. The material collected has been deposited at the Natural History Museum of Los Angeles County (LACM), Smithsonian Tropical Research Institution (STRI), and the Zoology Museum at the University of

Costa Rica (UCR) as shown in Table 1.

Discussion

In March 2006, Hermosillo was invited to return to Parque Nacional de Coiba to participate in a very interesting project with the following objectives:

1. Collect cyanobacteria, corals, algae and their grazers (basically opisthobranch mollusks) for the isolation of natural products, looking for chemicals that are active cures for diseases such as malaria, dengue fever, AIDS, cancer, etc.
2. Study trophic relationships at the level of chemical ecology; ideally finding associations such as *Dolabella auricularia* and *Symploca* spp. that would involve novel and biologically active natural products. These ecological associations would provide necessary information to adequately and sustainably use these resources, should they yield interesting chemicals.
3. Collect mollusks that have not been studied previously but could potentially have interesting active chemicals.
4. Increase knowledge of the biodiversity of the area, by adding to the species count of Hermosillo's previous inventory.

The scientists participating in the project were: Dr. Todd Capson (STRI), a biochemist working on the discovery and development of medicines from natural sources; Kathryn Clark, a graduate student working on her thesis with Dr. Capson; Dr. Angela Capper (STRI,

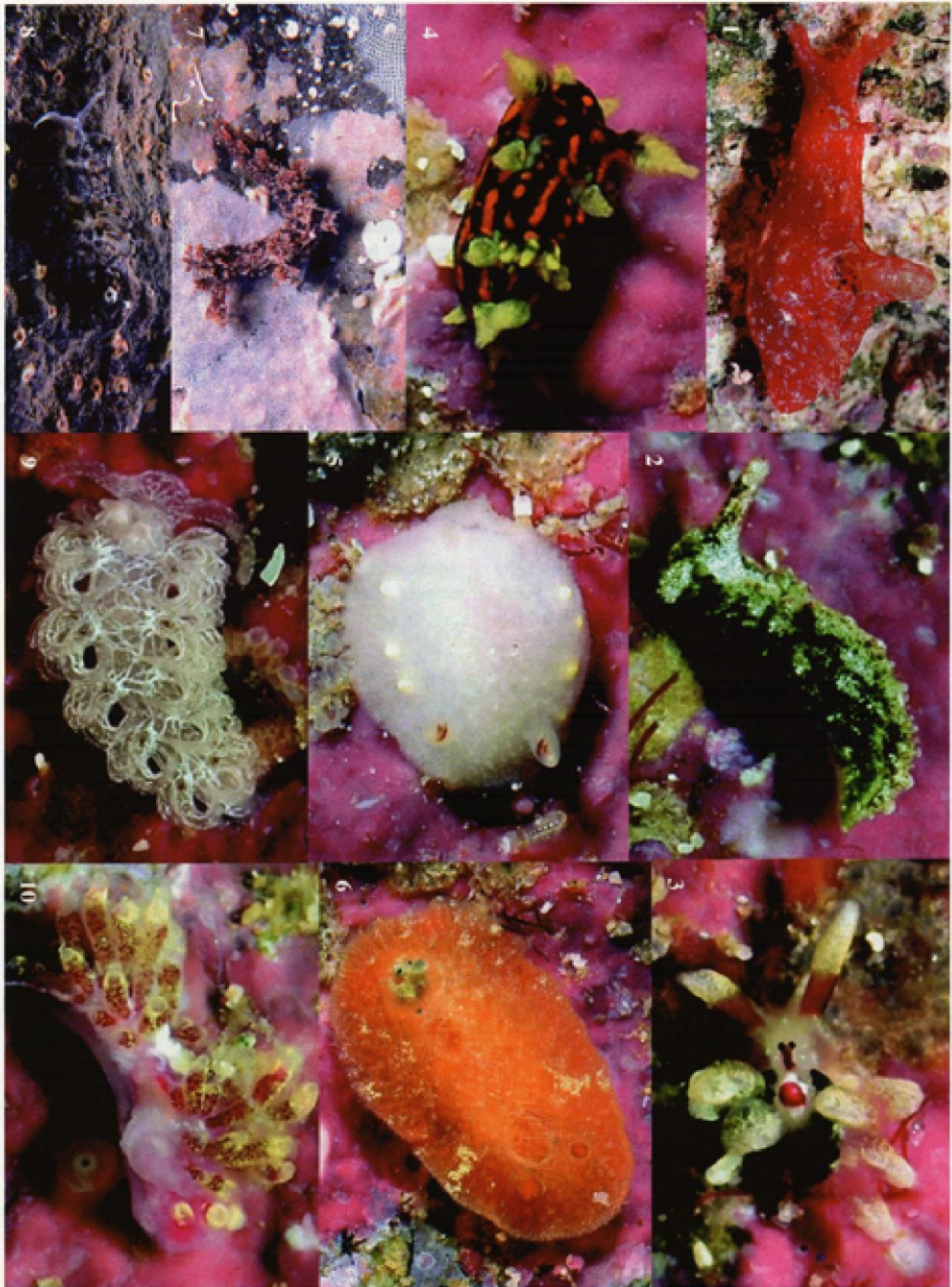
Table 1. Opisthobranch species added to the Coiba 2003 STRI Expedition inventory in Hermosillo (2004)

*Photographs only, as no specimens were collected or deposited.

Subclass OPISTHOBRANCHIA	Size range (mm)	Depth range (m)	Locality (number of specimens)	Repository
<i>Aplysia californica</i> Cooper, 1863 (Figure 1)		14	Islas sin nombre (1)	UCR
<i>Elysia</i> sp. 1 (in Behrens & Hermosillo, 2005)	5	10	Canales de Afuera (1)	STRI
<i>Elysia</i> sp. 2 (in Camacho-García et al., 2005) (Figure 2)		4-5	Isla Granitos de Oro (2), Isla Uva (1)	UCR
<i>Costasiella</i> sp. (Figure 3)		4	Isla Uva (1)	UCR
<i>Polycera</i> sp. (in Camacho-García et al., 2005) (Figure 4)		4	Isla Uva (1)	UCR
<i>Cadlina</i> sp. (in Camacho-García et al., 2005) (Figure 5)		4	Isla Uva (5)	UCR
<i>Aldisa</i> sp. (Figure 6)		4	Isla Uva (1)	UCR
<i>Doriopsilla janaina</i> Marcus & Marcus, 1967	12 - 21	1 - 7	Canales de Afuera (2), Isla Contreras (2) Isla de Coiba east side, Bahía Damas (1)	Photograph*
<i>Bornella sarape</i> Bertsch, 1980 (Figure 7)	7 - 19	8	Coiba NE, El Rosario (2)	LACM 172858
<i>Noumeaella isa</i> Marcus & Marcus, 1970 (Figure 9)		3.6	Isla Granitos de Oro (1)	UCR
<i>Antaeolidiella indica</i> Bergh, 1888	17	6	Canales de Afuera (1)	Photograph*
<i>Limenandra nodosa</i> Haefelfinger & Stamm, 1958	9 - 11	Intertidal	Isla de Coiba east side, Bahía Damas (2)	Photograph*
<i>Cuthona lizae</i> Orso & Valdés, 2003 (Figure 10)		3.6	Isla Granitos de Oro (1)	UCR
<i>Cuthona</i> sp. 4 (in Behrens & Hermosillo, 2005) (Figure 8)	8 - 18	Intertidal	Isla de Coiba east side, Bahía Damas (8)	LACM 172860

Figure captions

- Figure 1. *Aplysia californica*, 11 mm. Photo: Y. Camacho
 Figure 2. *Elysia* sp. 2, 3 mm. Photo: Y. Camacho
 Figure 3. *Costasiella* sp., 3 mm. Photo: Y. Camacho
 Figure 4. *Polycera* sp. 3.1 mm. Photo: Y. Camacho
 Figure 5. *Cadlina* sp., 3 mm. Photo: Y. Camacho
 Figure 6. *Aldisa* sp. 5 mm. Photo: Y. Camacho
 Figure 7. *Bornella sarape*, 18 mm. Photo: A. Hermosillo
 Figure 8. *Cuthona* sp., 9 mm. Photo: A. Hermosillo
 Figure 9. *Noumeaella isa*, 4 mm. Photo: Y. Camacho
 Figure 10. *Cuthona lizae*, 3 mm. Photo Y. Camacho



Florida), an expert in the study of cyanobacteria and the ecology of the animals that feed on them and Dr. Alicia Ibáñez (STRI), an expert taxonomist working on the flora of Parque Nacional de Coiba for the past seven years.

In previous studies: Todd Capson and Héctor Guzmán found active antimalarial substances in soft corals endemic to Parque Nacional de Coiba. In June 2004, a species of *Leptolyngbya* (cyanobacteria) collected off the western side of Isla de Coiba yielded some extremely interesting chemistry. Apparently, *Leptolyngbya* has not been as widely studied as genera such as *Lynngbya* and *Symploca*. These were fundamental to substantiate the arguments to promote the conservation of the marine environment of Parque Nacional de Coiba.

This bioprospection project seeks to take advantage of the biodiversity of Panamá and promote conservation. An investment of \$1.8 million has been made in Panamanian laboratories and in forming human resources (84 Panamá Nationals, 14 working on their Masters and 6 on their PhDs).

Concurrently, Camacho-García was also working at Coiba, as a participant of an expedition with Dr. Peter Glynn (University of Miami - U of M), Dr. Juan Mate (STRI), and other researchers and students from the University of California, Los Angeles (UCLA), University of Miami (U of M), University of Costa Rica (UCR), and the Natural History Museum of Los Angeles County (LACM).

Among the main goals of the trip was to study certain effects of El Niño and monitor the health of coral reefs at Isla Uva and other localities, measure erosion, collect DNA coral samples for future molecular studies, and study predation by setting traps at Isla Uva. As part of this project, Dr. Glynn invited three other researchers to work on the inventory of the biodiversity

of opisthobranch mollusks, decapods and polychaetes of Coiba.

Results

Opisthobranch species included in the Coiba 2003 STRI Expedition inventory in Hermosillo (2004) are shown here in Table 1. *Limenandra nodosa*, *Antaeolidiella indica* and *Doriopsisilla janaina* have been reported before in Panamá but were not included in Hermosillo's previous annotated list of species. The southernmost reports for *Polycera* sp., *Cuthona* sp. 4, *Elysia* sp. 1, *Elysia* sp. 2, *Cadlina* sp. and *Aplysia californica* were from Costa Rica (Camacho-García et al., 2005) so the present report extends their known distributions to the south.

Both *Bornella sarape* and *Cuthona lizae* had previously been reported from the Golfo de California to Bahía de Banderas, Jalisco, México. This is the first time these species have been observed outside México, extending the known range from 21°N to 7°N.

Noumeaella isa is a species previously found only in Madagascar and reported here for the first time in the tropical Americas.

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