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In Memoriam: Juan Carlos Naranjo López (1952–2014)

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Cuba and the Caribbean region lost a distinguished aquatic entomologist, expert on Ephemeroptera, and leader in freshwater conservation efforts on 11 May 2014.

Carlos, the only child of Juan Naranjo Guzmán and Juana Milagro López Mustelier, was born on 27 March 1952 and grew up in Manzanillo (presently Granma province). He then moved to Santiago de Cuba to pursue higher education at the Universidad de Oriente. His dissertation for the B.S. Degree in Biological Sciences (1975), conducted under the direction of Tatiana Komorova, Universidad de la Habana, concerned the population dynamics of the coffee leafminer (*Leucoptera coffella*).

After obtaining his bachelor's degree he remained at Universidad de Oriente as an instructor in biology, zoology, and ecology. Then in 1982 he began studies for a PhD at the State University of Leningrad (now St. Petersburg) under Dr. Andrei K. Brodsky. He commuted between Leningrad and Cuba for more material and completed an “Ecological study of amphibiotic insects (Ephemeroptera, Trichoptera and Odonata) of Gran Parque Nacional Sierra Maestra, Cuba," receiving his PhD in 1986. As a student in Russia he was a colleague of Nikita Kluge who later visited Cuba where the two friends greatly expanded our knowledge of Cuban Ephemeroptera with several papers reviewing all families in the country. Following completion of the PhD, Carlos was a Professor at Oriente University until 2009, served as head of the Department of Biology and Zoology from 1986 and 2001, and also served as the Dean of Biology and Pharmacy from 1987 to 1990. In 2009 he became Professor and Investigator for the Oriental Center for Ecosystems and Biodiversity (BIOECO) and was Secretary of the Scientific Council for BIOECO, where he remained until his death.

Associated with BIOECO is the Museo de Historia Natural "Tomas Romay". At the museum, Carlos concentrated his research on threatened species in freshwater ecosystems and directed students in studies on the Odonata, Trichoptera, Ephemeroptera, aquatic Heteroptera, Haliplidae, and even the first record of a Blephaceridae in Cuba. In 1998 he received a fellowship to study with Dr. O. Flint on Trichoptera at the Smithsonian Institution in Washington, D.C., and in 2010 he received a fellowship to work on Ephemeroptera at Florida A&M University. He was also interested in insect physiology and the field of forensic entomology; teaching a forensic course in Brazil in 2013.

His work at BIOECO gave him more opportunities to concentrate on the unique and endemic fauna of Cuba. Having developed a biomonitoring index for Cuban streams, he was particularly concerned with stream protection and the conservation of a sustainable ecological system. He recognised streams as being sensitive to deforestation, agricultural land use, chemical and organic contamination, habitat fragmentation, and problems caused by introduced exotic species, and thus was instrumental in encouraging education and citizen awareness of the environment. In BIOECO, he helped develop programs for regulation and sustainable management of these most valuable resources in Cuba.

He is survived by two sons, Carlos Ismar Naranjo Pacheco (Miami) and Carlos Raydel Naranjo Pacheco (Houston), and a close friend Somodevilla Noris Prebal.

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Selected publications

Naranjo, C. (1986) *Ecological-faunistic analysis of the amphibiotic insects (Ephemeroptera, Trichoptera, Odonata) of the Sierra Maestra Nacional Park (Cuba).* Autoreferat Doctoral. Ordena Trudovogo Krasnogo Znameni Zoologicheskij InstitutAcademii Nauk SSSR, Moskva, 18 pp. [in Russian]

Naranjo, C. (1988) Tipos eco-morfológicos de larvas de las efímeras cubanas (Ephemeroptera). *Miscelánea Zoológica, Academia de Ciencias de Cuba*, 37, 4.

Naranjo, C. (1988) Hallazgo de larvas del género *Euthyplocia* (Ephemeroptera: Euthyplocidae). *Miscelánea Zoológica, Academia de Ciencias de Cuba*, 38, 3–4.

Kluge, N. J. & Naranjo, J. C. (1990) Mayflies of the family Leptohyphidae (Ephemeroptera) in Cuba. *Entomologicheskoe Obozrenie*, 69, 564–577. [in Russian]

Kluge, N.J. & Naranjo, J.C. (1994) A peculiar new species of the mayfly genus *Euthyplocia* Eaton (Ephemeroptera: Euthyplociidae) from Cuba. *Entomologicheskoe Obozrenie*, 73, 777–781. [in Russian]

Naranjo, C. & Cañizares, M. (1999) Situación actual de Ephemeroptera (Insecta). *Cocuyo, Carta informativa de los Zoólogos cubanos, Museo Nacional de Historia Natural de Cuba*, 8, 17–19.

Naranjo, C. & A. Trapero, A. (2000) Insectos acuáticos del macizo montañoso de la Gran Piedra. *Biodiversidad de Cuba oriental*, 5, 89–93.

Naranjo, C. & Teruel, J. (2001) Nuevos registros de localidad de *Euthyplocia inaccessibile* Kluge et Naranjo, 1994 y *Hagenulus (Traverina) oriente* Kluge, 1993 (Ephemeroptera: Euthyplociidae, Leptophlebiidae). *Boletín de la Sociedad Entomológica Aragonesa*, 29, 47–48.

Muñoz, S., Naranjo, C., Garcés, G., González, D., Musle, Y. & Rodríguez, L. (2003) Evaluación de la calidad del agua utilizando los macroinvertebrados bentónicos como bioindicadores. *Revista Chapingo Serie Ciencias Forestales y del Ambiente*, 9 (2), 147–153.

López, P., Naranjo, C., Fernández, J., González, D.,Trapero, A. & Pérez, J. (2004) Insectos acuáticos del parque nacional "La Bayamesa", Cuba. *Boletín de la Sociedad Entomológica Aragonesa*, 35, 225–231.

Suárez, Y., Bello, O. & Naranjo, C. (2005) Invertebrados acuáticos de la costa Sur de la Península de Guanahacabides. *Cocuyo*, 14, 14 –16.

Naranjo, C. & González, D. (2005) Nuevos reportes de *Americabaetis naranjoi* (Kluge, 1992) (Ephemeroptera. Baetidae) en Cuba. *Boletín de la Sociedad Entomológica Aragonesa*, 36, 236.

Naranjo, C. & González, D. (2005) Nuevos reportes de la subespecie *Hagenulus* (*Careospina*) *hespera hespera* (Peters & Alayo, 1971) (Ephemeroptera: Leptophlebiidae) en Cuba. *Boletín de la Sociedad Entomológica Aragonesa*, 37, 278.

González, D., Trapero, A. & Naranjo, C. (2005) Insectos acuáticos del Parque Nacional Alejandro Humboldt, Cuba. *Boletín de la Sociedad Entomológica Aragonesa*, 36, 257–261.

González, D., Trapero, A, Naranjo, C. & López, P. (2005) Macroinvertebrados dulceacuícolas y calidad de las aguas en tres estaciones de Sierra de Nipe y Sierra Cristal, región Oriental de Cuba. *Cocuyo*, 15, 15–20.

Naranjo, C., González, D. Garcés, G., Brandimarte, A., Muñoz, S. & Musle, Y. (2005) Una metodología rápida y de fácil aplicación para la evaluación de la calidad del agua utilizando el índice BMWP-Cub para ríos cubanos. *Tecnura*, 9(17), 65–76.

López, P., Naranjo, C., Fernández, Y., Pérez, J., González, D. & Trapero, A. (2005) Freshwater insects. *In:* Fong, A., Macerias, D. & Alverson, W. (Eds.), *Cuba: Parque Nacional La Bayamesa. Rapid Biological Inventories.* The Field Museum, Chicago, 13, pp. 65–68.

López, P., González, D. & Naranjo, C. (2006) Lista de insectos acuáticos de la Reserva Ecológica "Alturas de Banao", Sancti Spiritus, Cuba (Insecta). *Boletín de la Sociedad Entomológica Aragonesa*, 38, 201–204.

Malzacher, P., Naranjo, C., González-Lazo, D.D. & Kluge, N.J. (2007) *Caenis cubensis*, a new apecies of the family Caenidae from Cuba (Insecta: Ephemeroptera). *Aquatic Insects*, 29 (4), 225–233.
http://dx.doi.org/10.1080/01650420701472046

González, D. & Naranjo, C. (2007) Clave de identificación para larvas de las especies del orden Ephemeroptera (Insecta) presentes en Cuba. *Revista de la Sociedad Entomológica Argentina*, 66 (1–2), 137–147.

Naranjo, C. & González, D. (2007) El BMWP, un índice biótico promisorio. *Bioriente*, 1 (1), 9–12.

González-Lazo, D., Salles, F.F. & Naranjo, C. (2008) Situación actual del estudio del Orden Ephemeroptera en Cuba. *Neotropical Entomology*, 37 (1), 45–50.
http://dx.doi.org/10.1590/S1519-566X2008000100006

Muñoz, S., Naranjo, C., González, D. & Imbert, T. (2009) Insectos acuáticos del Área Protegida Resolladero del río Cuzco (Provincia Guantánamo, Cuba). *Boletín de la Sociedad Entomológica Aragonesa*, 44, 497–503.

Olivares-Calzado, G., Naranjo-López, C., López del Castillo, P. & Morell-Bayard, A. (2012) Valoración de la calidad del agua del río San Juan (Santiago de Cuba) asociado a un foco de contaminación industrial. *Ciencia en su PC*, 4, 99–111.

Naranjo-López, C. & López Del Castillo, P. (2013) Biological monitoring working party, Un índice biótico con potencialidades para evaluar la calidad de las aguas en ríos cubanos. *Ciencia en su PC*, 2, 15–25.

Naranjo-López, C., López Del Castillo, P., Bello-González, O.C. & Muñoz-Riviaux, S. (2014) Cuba. *In:* Alonso-EguíaLis, P., Mora, J.M., Campbell, B. & Springer, M. (Eds.), *Diversidad, conservación y uso de los macroinvertebrados dulceacuícolas de México, Centroamérica, Colombia, Cuba y Puerto Rico*. Instituto Mexicano de Tecnología del Agua, Jiutepec, pp. 159–186

Naranjo-López, C., Portuondo-Ferrer, E., Reyes-Brea, J., López Del Castillo, P. & Garcés-González, G. (2014) Determinación de la calidad de las aguas en cinco localidades del río San Juan, Santiago de Cuba, Cuba. *Ciencia en su PC*, 3, 1–12.