Student Research News
(Section for WDA sponsored students invited to share their research news)

Exploring Colombian Odonata

Cornelio Andrés Bota Sierra [corneliobota@gmail.com]

My name is Cornelio Andrés Bota Sierra; I am a Colombian biologist and a sponsored student member in WDA. I did my bachelor studies at the Universidad de Antioquia in Medellín-Colombia, where I began studying Colombia's Odonata diversity, making field surveys to build a reference collection for my country since 2007. Most of the collected specimens are deposited at Colección Entomológica de la Universidad de Antioquia (CEUA); 5,566 specimens are registered, representing 281 identified species and probably around 100 more still unidentified. This collection was the basis for the description of eight species new to science (Figures: 1a-c) (Bota-Sierra & Wolff 2013, Bota-Sierra 2014a, Bota-Sierra *et al*. 2015), along with the rediscovery of several rare species and new records for Colombia (Figures 2a-b) (Bota-Sierra et al. 2010, Bota-Sierra 2012, Bota-Sierra 2014b). These publications and research have been essential for the Dragonfly Red List assessment in the tropical Andes (Bota-Sierra et al. 2016). During the last few years the survey effort was directed to the western Andean branch (Cordillera Occidental), one of the unexplored and richer areas in Colombia where several rare species were found. Now I am working on a field guide of the dragonflies from the Tatamá National Park, a highly biodiverse area in Cordillera Occidental, home to many Andean endemic species, and a place famous for

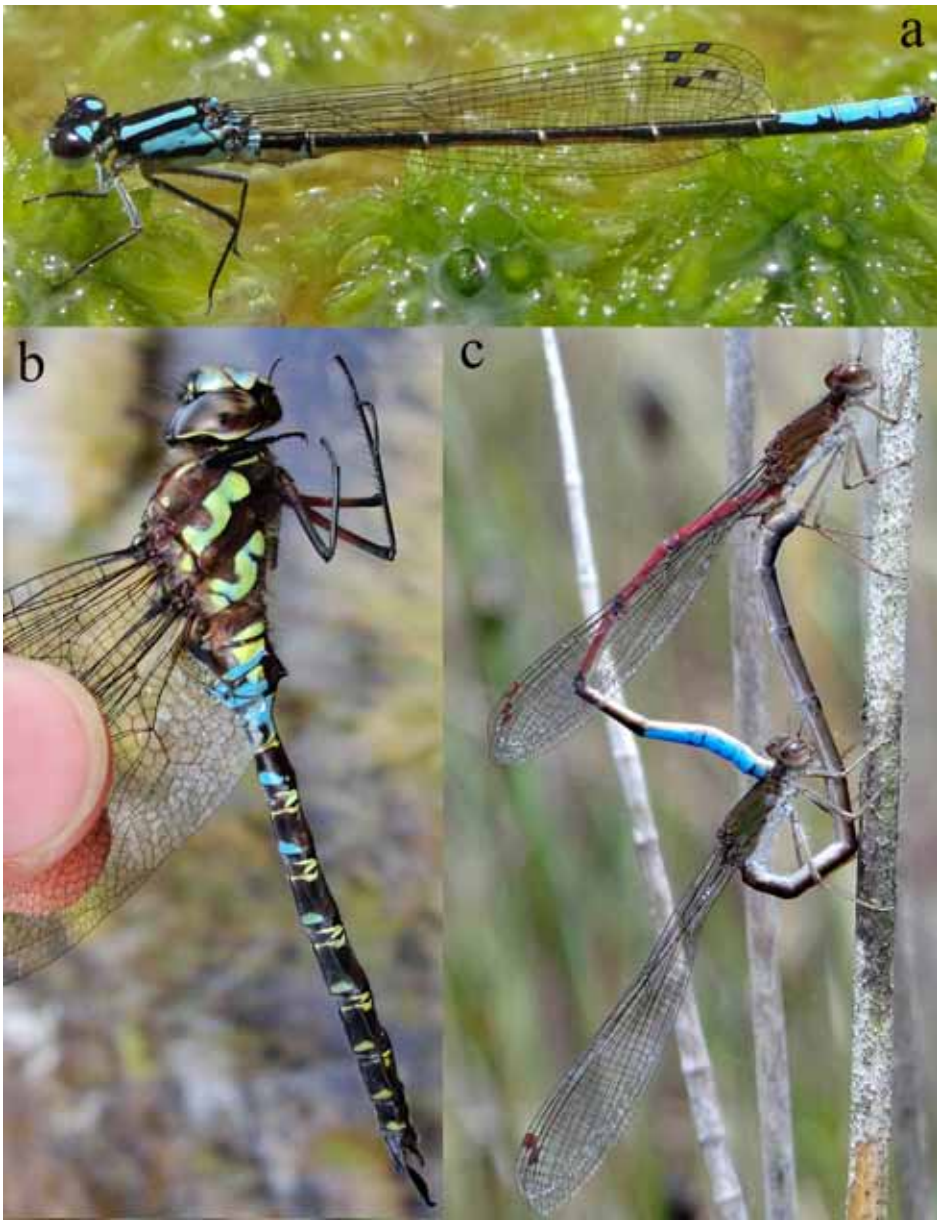

Figure 1: Some of the recently described Colombian endemic species: a) *Mesamphiagrion gaudiimontanum* Bota-Sierra, 2013, a specialized species found only in peat bogs as the larvae live only in *Sphagnum* bogs; b) *Rhionaeschna caligo* Bota-Sierra, 2014, an endemic species from Páramos found only at the top of mountain ecosystems; c) a pair of *Oxyallagma colombianum* Bota-Sierra, 2014, in copula, a specialized species found only in high mountain lakes.

birding where also very beautiful dragonflies can be found (Figures 2c, 3a-e).

In addition, I am close to obtaining my Master's degree at the Instituto de Ecología, A.C. (INECOL A.C.) in Xalapa-Mexico under the supervision of Dr. Rodolfo Novelo. We are working on a project which evaluates the variability of the thermal tolerance of the community of dragonflies in Tatamá National Park by looking for intra- and interspecific variation in tolerance to temperature. This will give us insights into the ability of each species to adapt to changes in temperature or their dependence on a specific temperature range to perform normal activities. If a population has a low capability to adapt to temperature changes, it will be in a worrying situation since the ability of individuals to migrate to higher altitudes in tropical mountain forests is constrained by the small amount of space and the complex biological interactions among a very diverse community; so the lower the capability to adapt to temperature change, the higher the risk of extinction among tropical mountain populations under the actual climate change scenario.

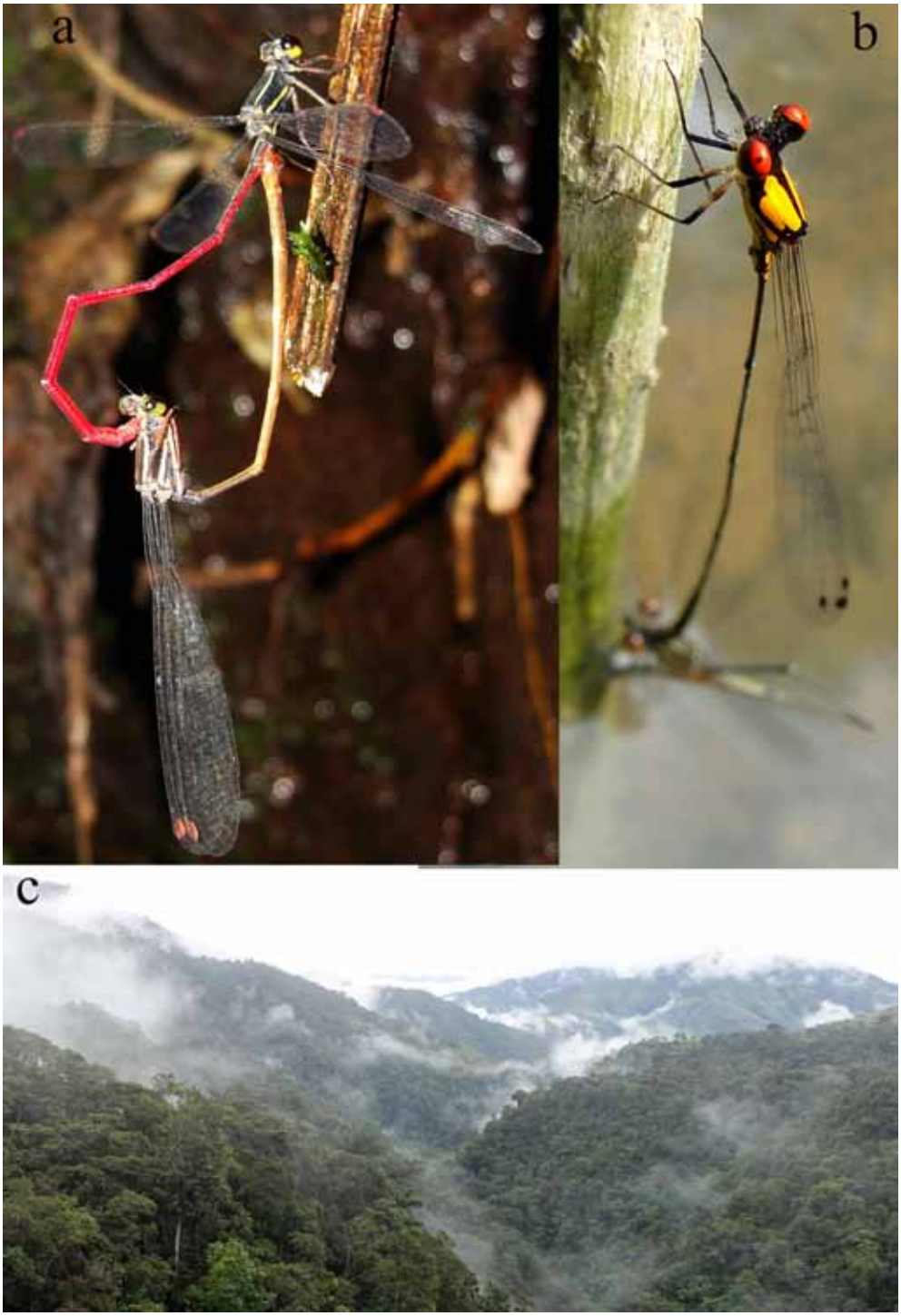

Figure 2: a) pair of *Mesagrion leucorrhinum* Selys, 1886, in copula, the only endemic Colombian genus, recently rediscovered; b) ovipositing pair of *Protoneura paucinervis* Selys, 1886, recently recorded in Colombian Amazon (Photograph by Cintia Moreno); c) cloud forest at Tatamá National Park.

Acknowledgements

To all of you (WDA members) for supporting us students with our membership, to Nancy van der Poorten for the invitation to write this note, to Nancy van der Poorten and Juliana Sandoval for their critical reading, and to Cintia Moreno for her photograph of *P. paucinervis*.

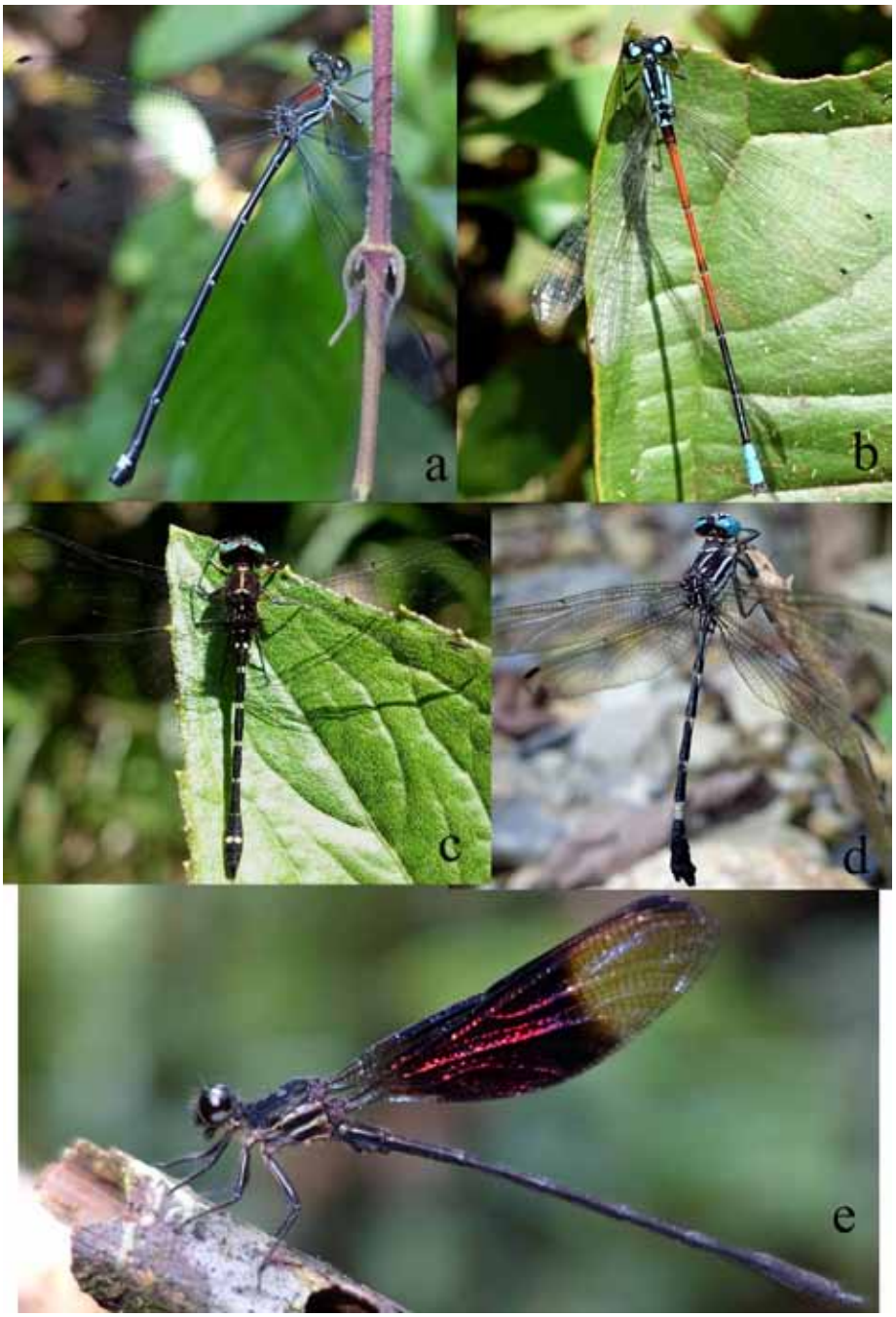

Figure 3: Some of the rare species in Tatamá National Park: a) *Philogenia* sp. nov., recently discovered; b) *Oreiallagma oreas* Ris, 1918, this Colombian bromeliad specialist was rediscovered a century after its first collection; c) *Gomphomacromia fallax* McLachlan, 1881, recently recorded for the first time in Colombia; d) *Epigomphus pechumani* Belle, 1970, recently rediscovered; e) *Cora aurea* Ris, 1918, the taxonomic placement of this beautiful species is an active topic of discussion.

References

Bota-Sierra, C.A., 2012. Rediscovery of *Proneura prolongata* (Zygoptera: Protoneuridae) and other new Odonata records from Colombian Amazon. *Agrion* 16 (2): 1–8.

Bota-Sierra C. A., 2014a. A brief look at the Odonata from the Páramo ecosystems in Colombia, with the descriptions of *Oxyallagma colombianum* sp. nov. and *Rhionaeschna caligo* sp. nov. (Odonata: Coenagrionidae, Aeshnidae, Libellulidae). *Zootaxa* 3856 (2): 192–210.

Bota-Sierra, C.A., 2014b. Nine new records of Odonata for Colombia from the Orinoco Basin (Lestidae, Calopterygidae, Heteragrionidae, Coenagrionidae, Libellulidae). *Notulae Odonatologica* 8 (4): 97–100.

Bota-Sierra, C. A., Baena-Bejarano, N. & Bermudez R, C., 2010. Primeros registros de *Gomphomacromia fallax* (Odonata, Corduliidae) en Colombia. *Revista Colombiana de Entomología* 36 (2): 333–334.

Bota-Sierra, C.A., Maufray, B., Palacino-Rodríguez, F., Hofmann, J., Tennessen, K., Rache, L.F. & Tognelli, M.F., 2016. Estado de conservación de las libélulas de los Andes Tropicales. In: Estado de Conservación y Distribución de la Biodiversidad de Agua Dulce. Tognelli, M.F., Lasso, C.A., Bota-Sierra, C.A., Jiménez-Segura, L.F. y Cox, N.A. (Editors). Gland, Suiza, Cambridge, UK y Arlington, USA: UICN. xii + 199 pp.

Bota-Sierra, C.A., C. Moreno-Arias & T. Faasen, 2015. Preliminary list of Odonata from the Colombian Amazon, with descriptions of *Inpabasis nigridorsum* sp. nov. & *Diaphlebia richteri* sp. nov. (Coenagrionidae & Gomphidae). *International Journal of Odonatology* 18 (3): 249–268, http://dx.doi.org/10.1080/13887890.2015.1081637

Bota-Sierra C. A. & M. Wolff, 2013. Taxonomic revision of *Mesamphiagrion* Kennedy, 1920 from Colombia (Odonata: Coenagrionidae), with the description of four new species. *Zootaxa* 3718 (5): 401–440.