

# Epiphytes and Lithophytes of Outlier Cockscomb Range, Stann Creek District, BELIZE

Bruce K. Holst, Elizabeth Gandy & Anastasia Sallen<sup>1</sup>; David Amaya, Ella Baron & Abner Linares<sup>2</sup> & Brijilio Bolon<sup>3</sup>

<sup>1</sup>Marie Selby Botanical Gardens, <sup>2</sup>Ian Anderson's Caves Branch Botanical Garden, <sup>3</sup>Belize Audubon Society

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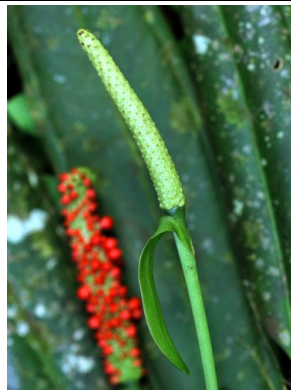
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## Flower and seed-bearing Plants



*Anthurium bakeri*  
(Araceae; base; EB)



*Anthurium bakeri*  
(Araceae; base; EB)



*Anthurium pentaphyllum*  
(Araceae; summit; BH)



*Anthurium pentaphyllum*  
(Araceae; summit; BH)



*Anthurium lucens*  
(Araceae; summit; BH)



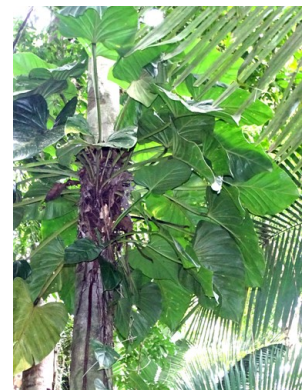
*Anthurium lucens*  
(Araceae; summit; EB)



*Monstera tuberculata*  
(Araceae; slope; SB)



*Monstera tuberculata*  
(Araceae; slope; BH)



*Philodendron fragrantissimum*  
(Slope, Araceae; summit; BH)



*Philodendron fragrantissimum*  
(Slope, Araceae; summit; BH)



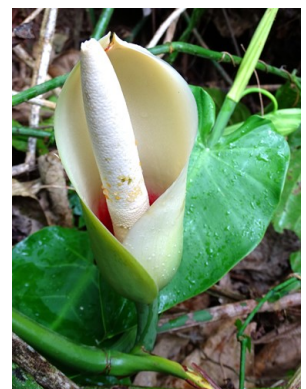
*Philodendron radiatum*  
(Araceae; summit; BH)



*Philodendron radiatum*  
(Araceae; summit; EB)



*Philodendron hederaceum*  
(Araceae; base; EK)



*Philodendron hederaceum*  
(Araceae; base; EK)



*Philodendron sagittifolium*  
(Araceae; slope, summit; BH)



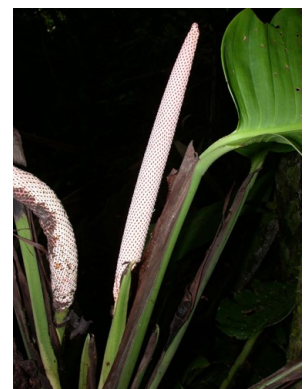
*Philodendron sagittifolium*  
(Araceae; slope, summit; BH)



*Philodendron* sp.  
(Araceae; base; BH)



*Rhodospatha wendlandii*  
(Araceae; base; BH)



*Rhodospatha wendlandii*  
(Araceae; base)  
(Photo by R. Aguilar, Costa Rica)



*Catopsis berteroniana*  
(Bromeliaceae; summit; BH)



*Catopsis berteroniana*  
(Bromeliaceae; summit; EB)



*Catopsis floribunda*  
(Bromeliaceae; summit; BH)



*Catopsis floribunda*  
(Bromeliaceae; summit; EB)



*Catopsis morreniana*  
(Bromeliaceae; summit; EB)



*Catopsis morreniana*  
(Bromeliaceae; summit; WC)



*Guzmania lingulata*  
(Bromeliaceae; summit; EB)



*Guzmania lingulata*  
(Bromeliaceae; summit; EB)



*Lemeltonia monadelpha*  
(Bromeliaceae; summit; EB)



*Lemeltonia monadelpha*  
(Bromeliaceae; summit; EB)



*Pitcairnia imbricata*  
(Bromeliaceae; summit; BH)



*Pitcairnia imbricata*  
(Bromeliaceae; summit; EB)



*Tillandsia anceps*  
(Bromeliaceae; summit; BH)



*Tillandsia anceps*  
(Bromeliaceae; summit; EB)



*Tillandsia bulbosa*  
(Bromeliaceae; summit; BH)



*Tillandsia bulbosa*  
(Bromeliaceae; summit; EB)



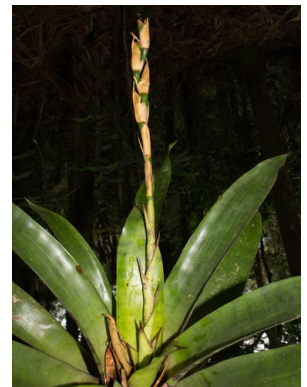
*Werauhia gladioliflora*  
(Bromeliaceae; summit; BH)



*Werauhia gladioliflora*  
(Bromeliaceae; summit; BH)



*Werauhia vittata*  
(Bromeliaceae; summit; MP)



*Werauhia vittata*  
(Bromeliaceae; summit; MP)



*Epiphyllum phyllanthus*  
(Cactaceae; summit; EB)



*Epiphyllum phyllanthus*  
(Cactaceae; summit; EG)



*Asplundia labela*  
(Cyclanthaceae; base, slope; BH)



*Asplundia labela*  
(Cyclanthaceae; base, slope; BH)



*Anathallis* sp.  
(Orchidaceae; summit; DA)



*Anathallis* sp.  
(Orchidaceae; summit; DA)



*Christensonella uncata*  
(Orchidaceae; summit; WC)



*Christensonella uncata*  
(Orchidaceae; summit; WC)



*Camaridium cucullatum*  
(Orchidaceae; summit; PN)



*Camaridium cucullatum*  
(Orchidaceae; summit; PN)



*Dichaea panamensis*  
(Orchidaceae; summit; DA)



*Dichaea panamensis*  
(Orchidaceae; summit; EB)



*Dichaea* sp. 1  
(Orchidaceae; summit; DA)



*Dichaea* sp. 1  
(Orchidaceae; summit; EB)



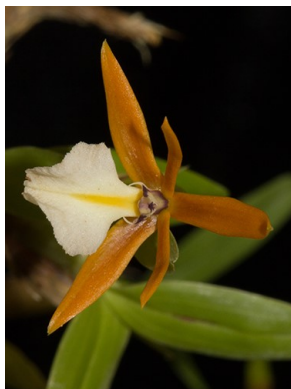
*Dichaea* sp. 2  
(Orchidaceae; summit; BH)



*Dichaea* sp. 2  
(Orchidaceae; summit; EB)



*Dinema polybulbon*  
(Orchidaceae; summit; EB)



*Dinema polybulbon*  
(Orchidaceae; summit; WC)



*Elleanthus caricoides*  
(Orchidaceae; summit; BH)



*Elleanthus caricoides*  
(Orchidaceae; summit; DA)

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*Elleanthus graminifolius*  
(Orchidaceae; summit; EB)



*Elleanthus graminifolius*  
(Orchidaceae; summit; DA)



*Encyclia bractescens*  
(Orchidaceae; summit; WC)



*Encyclia bractescens*  
(Orchidaceae; summit; EB)



*Encyclia belizensis*  
(Orchidaceae; summit; BH)



*Encyclia belizensis*  
(Orchidaceae; summit; PN)



*Encyclia chloroleuca*  
(Orchidaceae; summit; DA)



*Epidanthus paranthicus*  
(Orchidaceae; summit; BH)



*Epidanthus paranthicus*  
(Orchidaceae; summit; EB)



*Epidendrum galeottianum*  
(Orchidaceae; summit; EB)



*Epidendrum galeottianum*  
(Orchidaceae; summit; BH)



*Epidendrum hawkesii*  
(Orchidaceae; summit; DA)



*Epidendrum hawkesii*  
(Orchidaceae; summit; DA)



*Epidendrum nocturnum*  
(Orchidaceae; summit; EB)



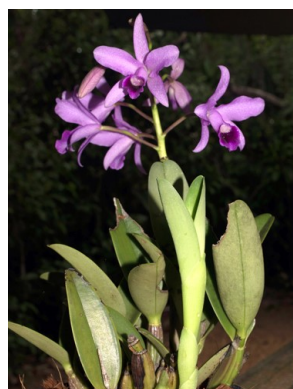
*Epidendrum nocturnum*  
(Orchidaceae; summit; EB)



*Eriopsis rutidobulbon*  
(Orchidaceae; summit; BH)



*Eriopsis rutidobulbon*  
(Orchidaceae; summit; DA)



*Guarianthe bowringiana*  
(Orchidaceae; summit; BH)



*Guarianthe bowringiana*  
(Orchidaceae; summit; BH)



*Jacquiella globosa*  
(Orchidaceae; summit; MP)

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*Jacquiella globosa*  
(Orchidaceae; summit; WC)



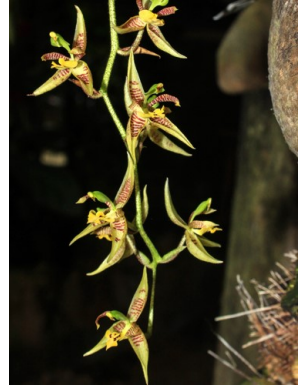
*Jacquiella teretifolia*  
(Orchidaceae; summit; DA)



*Jacquiella* sp.  
(Orchidaceae; summit; DA)



*Kegeliella atropilosa*  
(Orchidaceae; summit; BH)



*Kegeliella atropilosa*  
(Orchidaceae; summit; DA)



*Lophiaris* sp.  
(Orchidaceae; slope; BH)



*Ornithidium fulgens*  
(Orchidaceae; summit; DA)



*Ornithidium fulgens*  
(Orchidaceae; summit; EB)



*Pleurothallis uncinata*  
(Orchidaceae; summit; EB)



*Pleurothallis uncinata*  
(Orchidaceae; summit; EB)



*Polystachya clavata*  
(Orchidaceae; summit; DA)



*Polystachya clavata*  
(Orchidaceae; summit; WC)



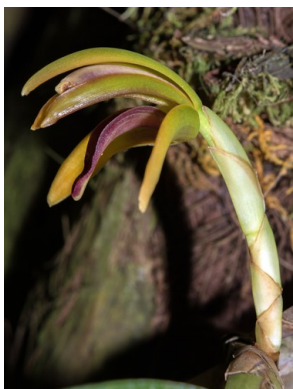
*Prosthechea pygmaea*  
(Orchidaceae; summit; BH)



*Prosthechea pygmaea*  
(Orchidaceae; summit; EB)



*Rhetinantha aciantha*  
(Orchidaceae; summit; DA)



*Rhetinantha aciantha*  
(Orchidaceae; summit; EB)



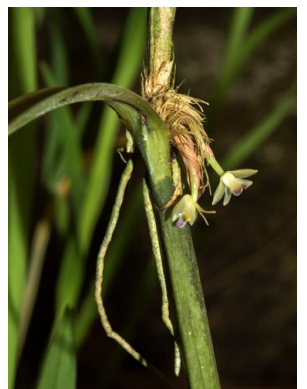
*Scaphyglottis lindeniana*  
(Orchidaceae; summit; BH)



*Scaphyglottis lindeniana*  
(Orchidaceae; summit; EB)



*Scaphyglottis minutiflora*  
(Orchidaceae; summit; EB)



*Scaphyglottis minutiflora*  
(Orchidaceae; summit; EB)

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*Sobralia decora*  
(Orchidaceae; summit; BH)



*Sobralia decora*  
(Orchidaceae; summit; BH)



*Sobralia fragrans*  
(Orchidaceae; summit; BH)



*Sobralia fragrans*  
(Orchidaceae; summit; EB)



*Sobralia macrantha*  
(Orchidaceae; summit; EB)



*Sobralia macrantha*  
(Orchidaceae; summit; EB)



*Stanhopea ecornuta*  
(Orchidaceae; summit; DA)



*Stanhopea ecornuta*  
(Orchidaceae; summit; EB)



*Trichosalpinx blaisdellii*  
(Orchidaceae; slope; BH)



*Trichosalpinx blaisdellii*  
(Orchidaceae; slope; EB)



*Trichosalpinx dura*  
(Orchidaceae; summit; DA)



*Trichosalpinx dura*  
(Orchidaceae; summit; DA)



*Vanilla* sp.  
(Orchidaceae; slopes; BH)



*Xylobium colleyi*  
(Orchidaceae; summit; DA)



*Xylobium colleyi*  
(Orchidaceae; summit; DA)



*Peperomia ebingeri*  
(Piperaceae; slope; BH)



*Peperomia ebingeri*  
(Piperaceae; slope; BH)



*Peperomia obtusifolia*  
(Piperaceae; base; BH)



*Peperomia obtusifolia*  
(Piperaceae; base; EB)



*Peperomia portobellensis*  
(Piperaceae; base; EB)



*Peperomia portobellensis*  
(Piperaceae; base; EB)



*Hillia tetrandra*  
(Rubiaceae; summit; BH)



*Hillia tetrandra*  
(Rubiaceae; summit; WC)



*Notopleura parasitica*  
(Rubiaceae; summit; BH)



*Notopleura parasitica*  
(Rubiaceae; summit; BH)

## Spore-bearing Plants



*Asplenium serratum*  
(Aspleniaceae; base; BH)



*Asplenium serratum*  
(Aspleniaceae; base; BH)



*Elaphoglossum herminieri*  
(Dryopteridaceae; base; BH)



*Elaphoglossum herminieri*  
(Dryopteridaceae; base; MP)



*Elaphoglossum latifolium*  
(Dryopteridaceae; summit; BH)



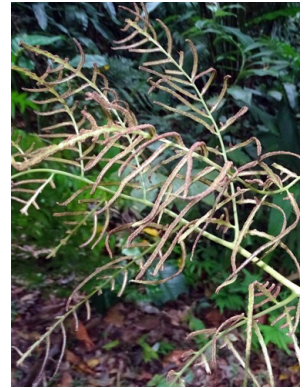
*Elaphoglossum latifolium*  
(Dryopteridaceae; summit; PN)



*Elaphoglossum* sp.  
(Dryopteridaceae; summit; BH)



*Polybotrya caudata*  
(Dryopteridaceae; slope; BH)



*Polybotrya caudata*  
(Dryopteridaceae; slope; BH)



*Didymoglossum godmanii*  
(Hymenophyllaceae; base; BH)



*Didymoglossum godmanii*  
(Hymenophyllaceae; base; BH)



*Hymenophyllum polyanthos*  
(Hymenophyllaceae; summit; BH)



*Hymenophyllum polyanthos*  
(Hymenophyllaceae; summit; BH)



*Trichomanes crispum*  
(Hymenophyllaceae; summit; BH)

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*Trichomanes crispum*  
(Hymenophyllaceae; summit; BH)



*Trichomanes tuerckheimii*  
(Hymenophyllaceae; base; BH)



*Trichomanes tuerckheimii*  
(Hymenophyllaceae; base; BH)



*Lomariopsis recurvata*  
(Lomariopsidaceae; slope; BH)



*Lomariopsis recurvata*  
(Lomariopsidaceae; slope; BH)



*Nephrolepis* sp.  
(Nephrolepidaceae; summit; BH)



*Nephrolepis* sp.  
(Nephrolepidaceae; summit; BH)



*Cochlidium linearifolium*  
(Polypodiaceae; summit; BH)



*Cochlidium linearifolium*  
(Polypodiaceae; summit; BH)



*Leucotrichum mitchelliae*  
(Polypodiaceae; summit; BH)



*Leucotrichum mitchelliae*  
(Polypodiaceae; summit; BH)



*Microgramma lycopodioides*  
(Polypodiaceae; slopes; BH)  
Sterile leaves.



*Microgramma lycopodioides*  
(Polypodiaceae; slopes; EB)  
Fertile leaves



*Niphidium crassifolium*  
(Polypodiaceae; summit; BH)



*Niphidium crassifolium*  
(Polypodiaceae; summit; BH)



*Serpocaulon triseriale*  
(Polypodiaceae; summit; BH)



*Serpocaulon triseriale* rhizome  
(Polypodiaceae; summit; BH)



*Psilotum nudum*  
(Psilotaceae; slopes; DA)



*Psilotum nudum*  
(Psilotaceae; slopes; DA)

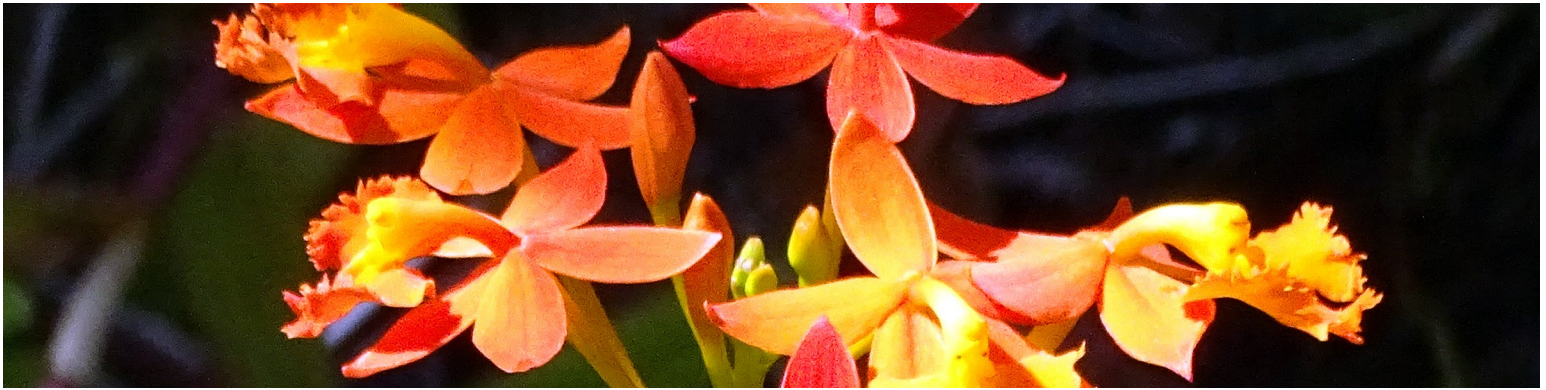


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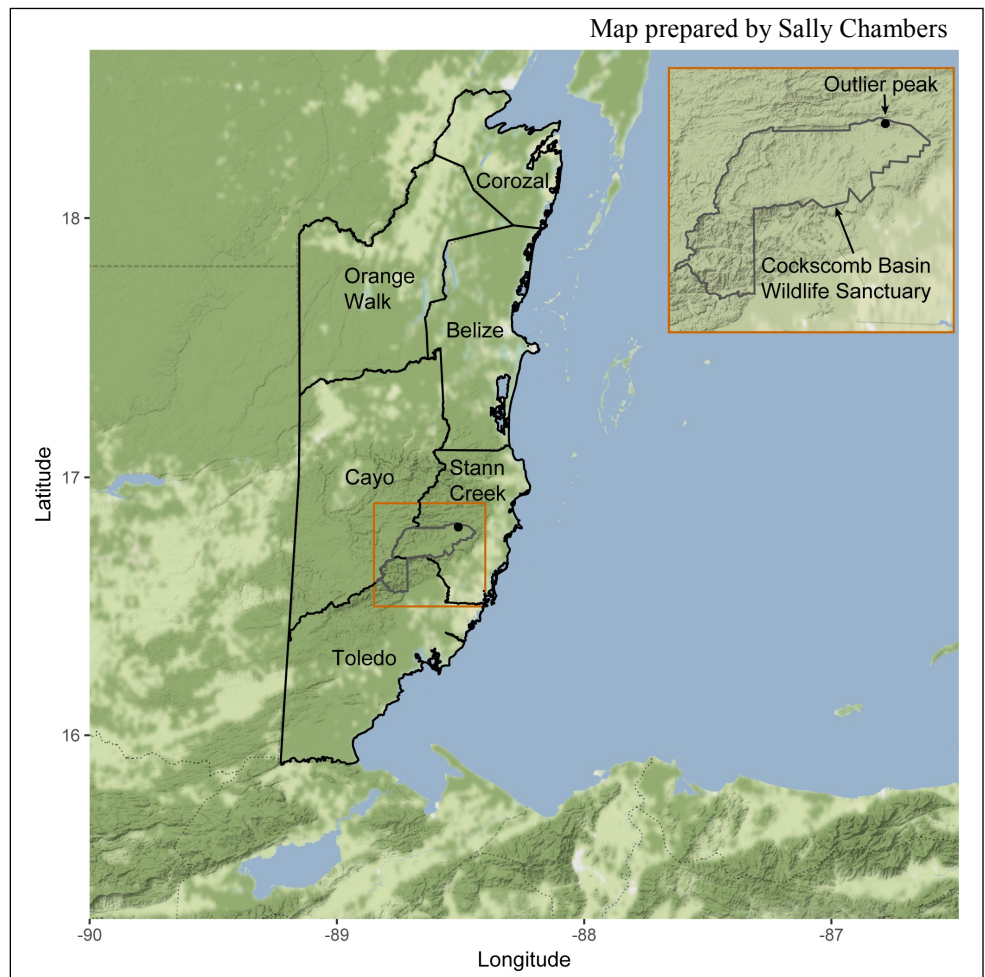
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Above, *Epidendrum hawkesii*, Orchidaceae, is known in Belize only from the summits of the Cockscomb Range (BH)

**Outlier** is an eastern ridge of the spectacular east-west Cockscomb Range that is home to the second highest peak in Belize, Victoria Peak (3688 ft, 1120 m). The higher portions of Outlier's undulating ridge top are located approximately 12 km to the east of Victoria, and range from 500–650 m elevation. They are just high enough to capture enough moisture to host a diversity of plant species known largely from higher summits of Belize in the Cockscomb Range and Maya Mountains. Outlier lies within the **Cockscomb Basin Wildlife Sanctuary**, recognized internationally as the world's first jaguar preserve. The Sanctuary is comprised of more than 150 sq. miles (400 km<sup>2</sup>) and known for spectacular waterfalls, mountains, and rich biological diversity. The Sanctuary also protects the upper watersheds of important river systems that provide ecosystem services to many people in Belize. Cockscomb has two distinctive basins, which are separated by a ridge of land. The East Basin drains into South Stann Creek and the West Basin drains into Swasey River, a tributary of Monkey River. In the Maya Mountain extension of the Sanctuary is Trio Branch, which ultimately drains into Monkey River. *The authors appreciate the assistance of the Belize Audubon Society for logistical support, and John Shuey for his advice*



Below, a view from the summit of Outlier, looking to the south (BH)

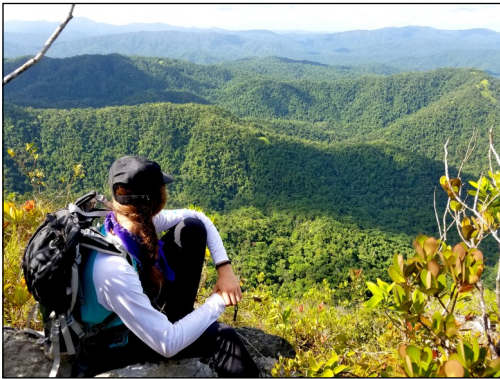


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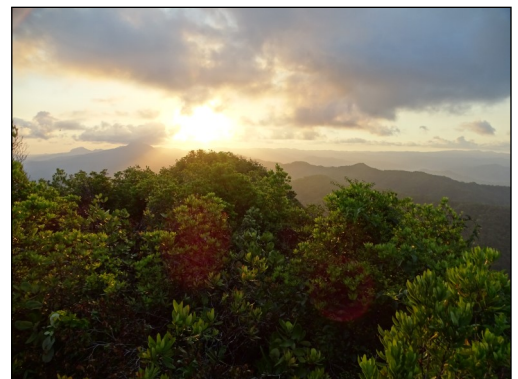
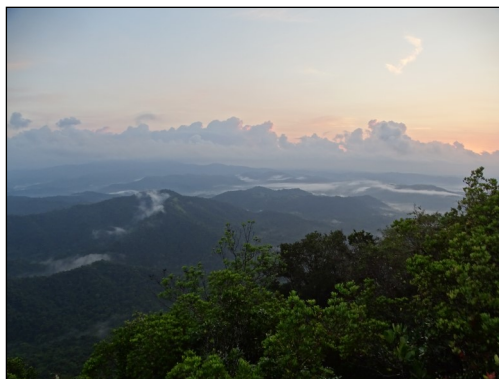
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**From Base to Summit.** *First row:* 2018 exploration and support team (back row, Abner Linares, Bruce Holst, Jose Hernandez, David Amaya, Elizabeth Gandy, in front, Brijilio Bolon, Anastasia Sallen); trail and forest near base; steep slope forest, with many Araceae hemiepiphytes in gap areas. *Second row:* first open view from the summit toward the south of the surrounding area; a profusion of epiphytes, including many kinds of mosses and vascular plants are found mostly above 500 m elevation on the summit. Photos by BH.



**Summit Views.** *First row:* View of the undulating Outlier ridge toward the west; another view from the summit of Outlier to the west, with Victoria Peak visible in the distance; two attractive shrubs/trees on the summit include the delightfully fragrant *Purdiaea belizensis* (Clethraceae); and *Second row:* hummingbird-pollinated *Orthaea brachysiphon* (Ericaceae), other trees present include *Ilex guianensis* (Aquifoliaceae), *Licania hypoleuca* (Chrysobalanaceae), *Clusia* spp. (Clusiaceae), *Cojoba* sp. (Fabaceae), *Myrcia splendens* (Myrtaceae); sunrise; and sunset from the summit. Photos by BH.