

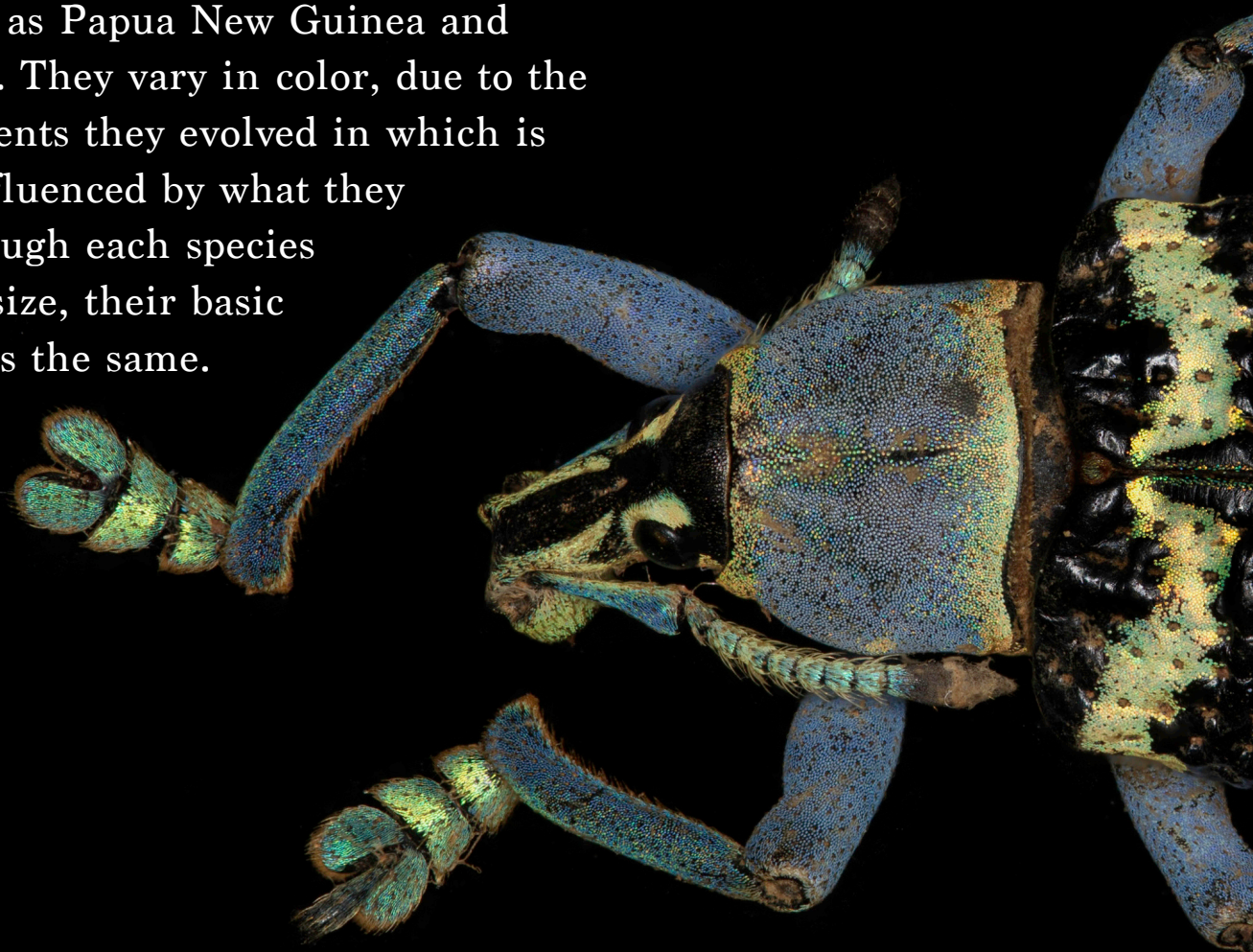
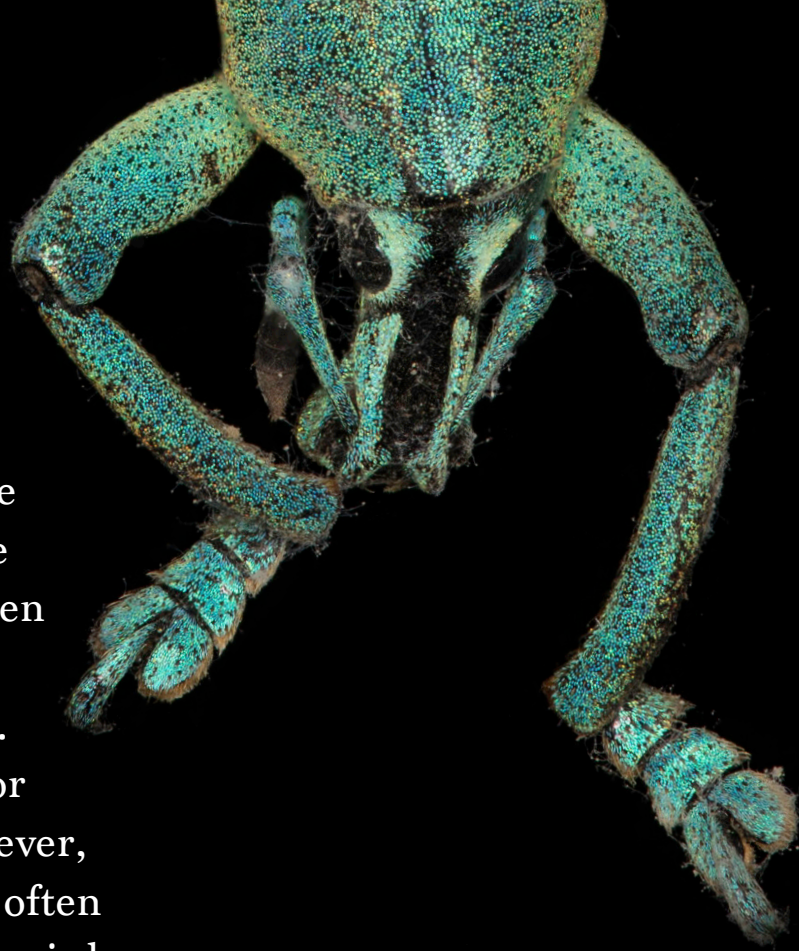
Beetles

The Eupholus Genus
and their colors

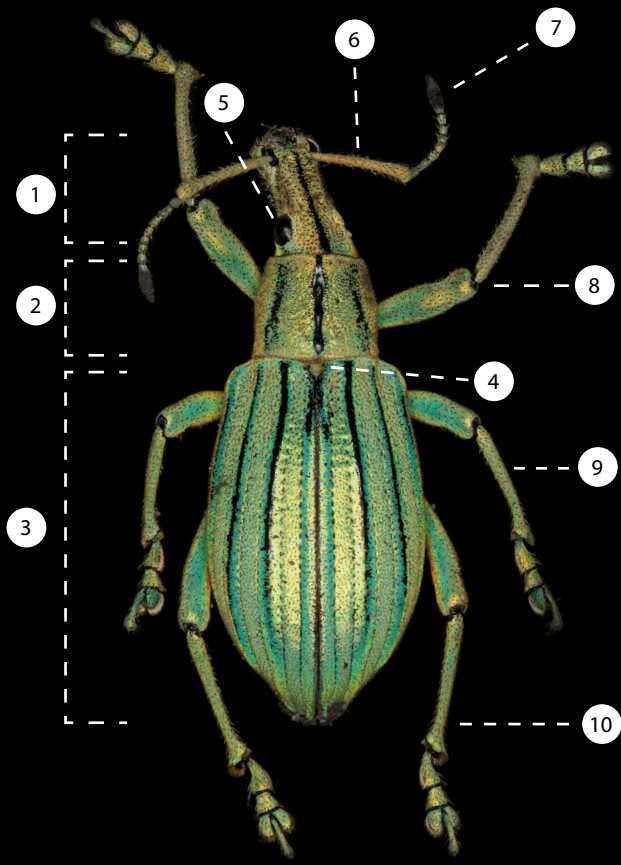


Background

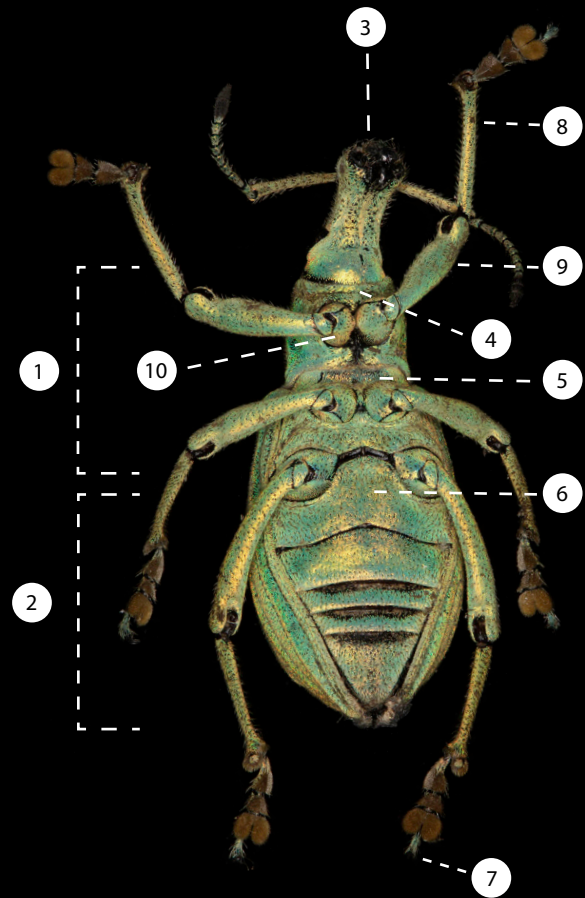
The three types of beetles that were used for this project are part of the Curculionidae family. They are often called weevils, nick named snout beetles due to their head structure. Normally they have a range of color from black to reddish brown. However, the beetles in the genus *Eupholus* often have very bright colors. They can mainly be found on the islands of South East Asia such as Papua New Guinea and Indonesia. They vary in color, due to the environments they evolved in which is highly influenced by what they eat. Although each species varies in size, their basic anatomy is the same.



Basic Anatomy



Dorsal Habitus of
Eupholus Cuvieri



Ventral Habitus of
Eupholus Cuvieri

- | | |
|--------------|---------------|
| 1) Head | 6) Antenna |
| 2) Pronotum | 7) Club |
| 3) Elytra | 8) Front Leg |
| 4) Scutellum | 9) Middle Leg |
| 5) Eye | 10) Hind Leg |

- | | |
|----------------|----------------|
| 1) Thorax | 6) Metasternum |
| 2) Abdomen | 7) Claws |
| 3) Mandibles | 8) Tibia |
| 4) Prosternum | 9) Femur |
| 5) Mesosternum | 10) Coxa |

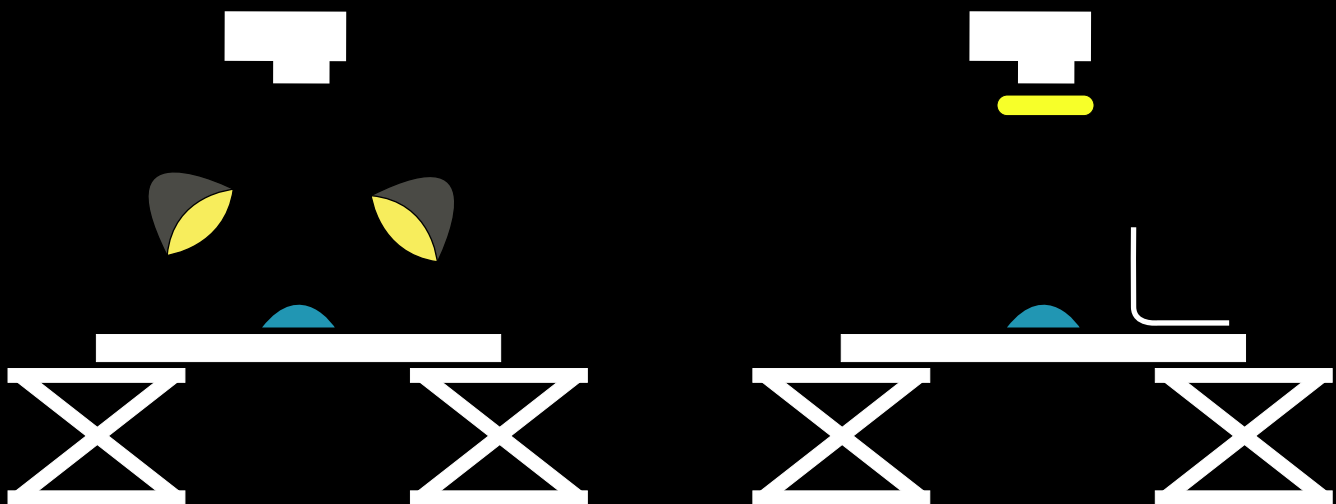
How they get their colors

The different colors these beetles are is not due to pigmentation. In fact it is a “result of angle-independent light reflections from three-dimensional structured scales on the exoskeleton” (Bouchard). These tiny light catching scales on their backs give them a flashy metallic coloring. The scales reflect a variety of colors which is due to diffraction by the photonic crystals inside of the scales. With different angles of the scales comes different visible colors. They also feed on yam leaves which contain chemicals that are toxic to many animals, so their colorful bodies are also a warning to their predators.



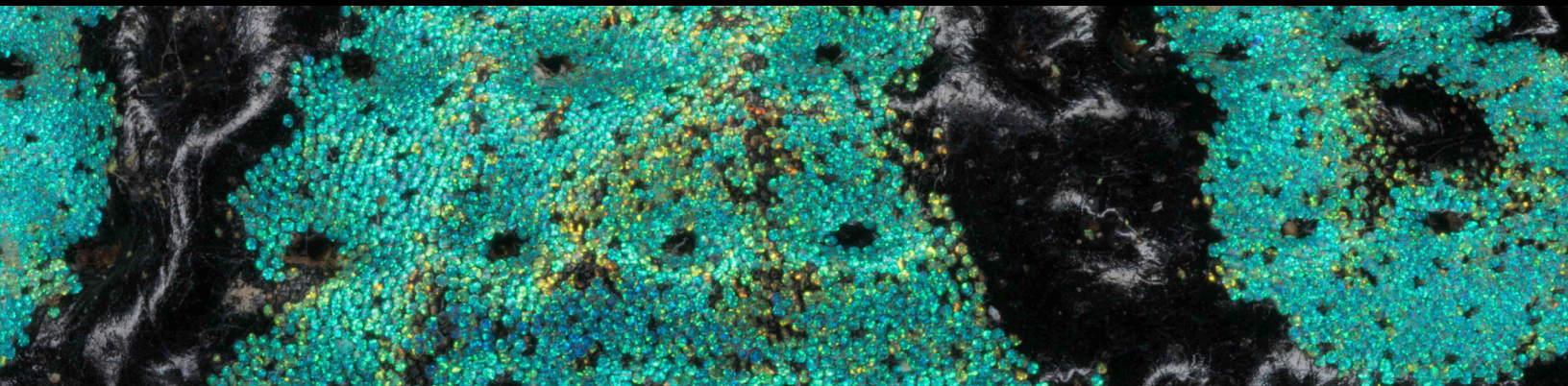
Photographic Technique

To photograph the beetles, they were first placed on an elevated piece of glass with black velvet underneath to achieve the black background. The camera was mounted above the specimen at a 90-degree angle and attached to a Stack Shot. The Stack Shot was used to shoot the beetles at different focal points so the images could be focus stacked in post production. The subject was lit two different ways. For the full size image of the beetles, two fiber optic lights with diffusers were placed on opposite sides of the subject at a 45-degree angle. For the high magnification images of the different sections of the beetles, a ring flash was attached to the camera lens for even lighting and a white reflector was placed next to the subject to provide filler light.



About the Author

Kristen Hanley is a third year photography student at the Rochester Institute of Technology. She is graduating in the spring of 2018 with a dual degree in Biomedical Photographic Communications and Visual Media with a concentration in Graphic Design. She plans on pursuing a career as a photo editor or a designer for informational textbooks. When she is not busy photographing beetles, she can be found working in the studios creating promotional photographs for different clubs on campus. Her main passion outside of photography is theater, in which she helps direct and market the productions. To contact Kristen please email here at kmh4580@rit.edu



References

- 1) https://www.researchgate.net/figure/297460639_fig1_Fig-1-Morphology-of-a-generalized-Curculionidae-A-dorsal-habitus-B-ventral
- 2) <http://www.antoniomachado.net/galleries/illustration/anatomy-of-a-weevil/>
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- 4) <https://www.scribd.com/document/313844521/Clasificacion-taxonomica-de-curculionidae-Anderson2002>
- 5) Bouchard, Patrice. *The Book of Beetles: A Life-Size Guide to Six Hundred of Nature's Gems.*

