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Caption: Malabar Slender Loris *Loris lydekkerianus malabaricus* © Dileep Anthikkad.



## Wildlife art and illustration – combining black and white ink drawings with colour: some experiments in Auroville, India

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Representing experiences concerning nature, with the variety of material and concepts at our disposal during present times, is a personal, and in our case, collective interpretation (Ramanujam & Brooks 2011). Huffington (1988), author of Pablo Picasso's biography mentions that he said, "nature has to exist so that we may rape it" But we are not here to judge anybody, and everyone is entitled to his / her own opinion, though one may vehemently disagree, mildly disagree or agree. In our opinion we are simply here to find new ways of expression, experiment and probably come up with something original and worthwhile, not to merely hold on to some ideology / media that has worked in the past. The 'eternal adventure' and thrill that comes from exploring new boundaries has most of us in its thrall and pushing beyond boundaries can often bring in a breath of fresh air that is a 'feeling' one cannot put into proper prose.

Here we deal with complete opposites: viz. a purist black and white medium (Ramanujam & Joss 2014) versus colour where we have made some headway in combining both media to express a fulfilling mode of expression.

There have been some artists who have used the technique of combining black and white pen and ink with paints which allows achieving a high level of control and detail in conjunction with aesthetic colour washes. One

such artist has been Angus Fraser who works primarily with natural subjects and enjoys representing subjects in delicate but dynamic compositions. But unfortunately, not having a taxonomical background, his compositions tend to be stilted, especially his wildlife imagery. One such example can be seen in his rendering of a Wedge-tailed Eagle on its nest where he shows the step by step development of the final product <[instructables.com/Ink-Pen-Watercolour-Drawing](http://instructables.com/Ink-Pen-Watercolour-Drawing)>

Our experiments centre on scientific precision which combine pen and colour, especially watercolour pencils, though we have worked with both transparent and opaque washes at times. This work can be seen on the covers of *Journal of Threatened Taxa* for the year 2015. Our basic style of combining black ink with colour is that the colour is minimal, hence you may generally not see the entire animal in colour (though there have been exceptions), but only what we felt were the highlights – we allow the line work to speak for itself and allow black and white to emerge as the principal factor.

Our style of illustration concerning colour has often been said to be minimalistic, which it is. Minimalism is a comparatively recent art form. It began with the 'De stijl art movement' (also called Neoplasticism) which was in fashion in between 1917 to 1930. It pushed simple (and often abstract ideas) using lines, black and white, and simple colours to create new effects which

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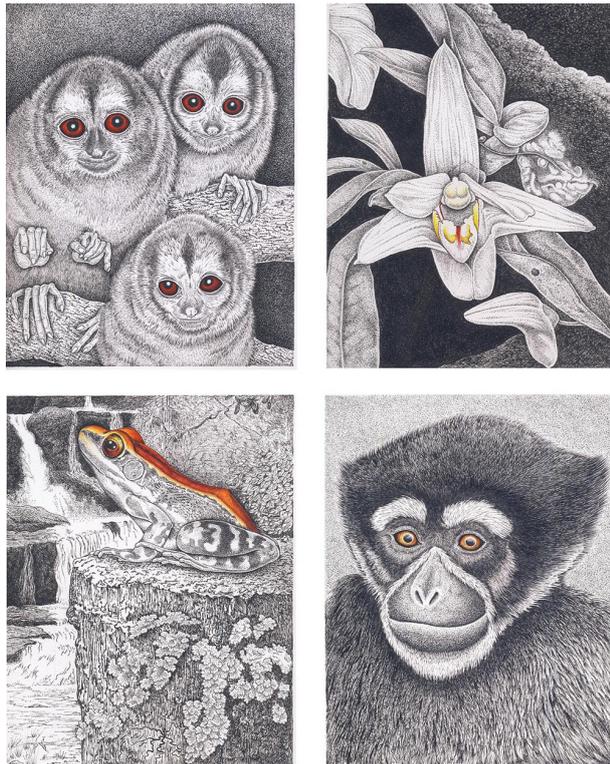


Image 1. It all started with JoTT's chief editor requesting the principal author of this article to create drawings with a difference for the journal cover in 2015. It was thought that it was a time to experiment, hence though we kept the onus on black and white we added poster colour to highlight salient features of the animals which could not be satisfactorily represented in monotone. Species depicted: Peruvian Night Monkey *Aotus micronax* (top left), Orchid *Conchidium braccatum* (top right), Fungoid Frog *Hydrophylax bahuvistara* (bottom left), and Eastern Hoolock Gibbon *Hoolock leuconedys* (bottom right).



Image 2. We also experimented with watercolour washes, but these showed very mild signs of smudging the ink. In this case the rendering of Denison's or Torpedo Barb *Sahyadria denisonii*. It is probably because we use Micron pens and could be avoided if we use technical pens with truly waterproof ink like Rotring, but it is very difficult to use these pens due to frequent clogging.

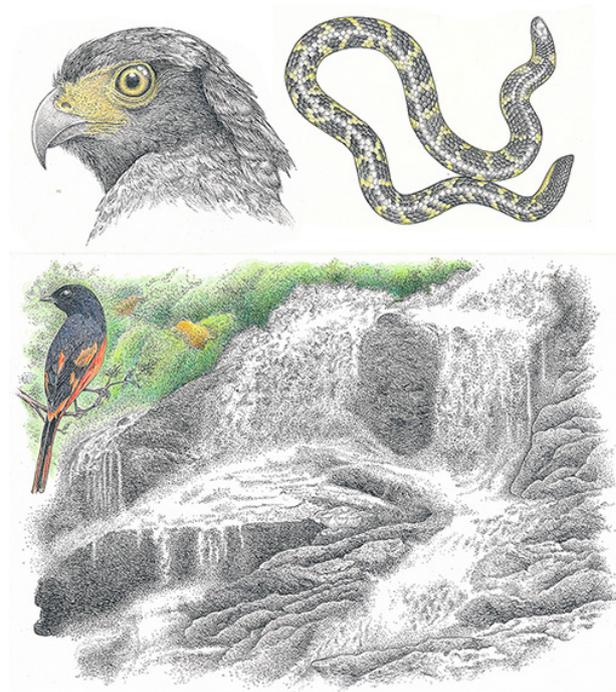


Image 3. We next began drawing for projects we had undertaken. These images were executed during a biodiversity survey we had undertaken in the Kiliyur Falls area in Yercaud, Shevroy Hills in the Eastern Ghats of Tamil Nadu. Here we employed watercolour pencil and from that time it has remained our favourite mode as it prevents the ink running or smudging.

Species depicted: Crested Serpent Eagle *Spilornis cheela* (top left), and the Orange Minivet *Pericrocotus flammeus* and Kiliyur Falls at the bottom. On the top right is the Sheildtail *Uropeltis shorttii* - it had been assumed to be *Uropeltis ceylanicus* in the past, but it was found to be different (Ganesh et. al. 2014). The holotype (first recorded specimen to science) which our team from Pitchandikulam collected now rests with the Zoological Survey of India, Southern Regional Station.

were very popular at the time. Though its popularity died out in just 13 years, it influenced many artists, architects, designers, etc and the effects are in vogue to this day. Today, wherever one turns another designer is releasing a project featuring a minimalistic design style <designshack.net/articles/layouts/minimalist-design-is-taking-over-heres-why/> Minimalistic design can be identified by its simple nature and use of only what the artist / illustrator feels is sufficient to communicate elements he / she feels are essential. What we see with minimalism is a distinct focus on one bit of content without competition from other elements. That is where our style differs. Our works essentially concentrate primarily on detailed taxonomic line work and colour is the only minimalistic element in our otherwise detailed drawings.

We are not at all insinuating that we are the first to come up with a new wildlife art form – Eric C. Watson comes to mind immediately and many of his renderings



Image 4. There have been applications for some of the artwork we do. One set of drawings was used to produce a table top calendar depicting 12 species of the snakes of Tamil Nadu.

Species depicted: Common Cat Snake *Boiga trigonata*, Bronzeback Tree Snake *Dendrelaphis tristis*, Green Vine Snake *Ahaetulla oxyrhyncha*, Ornate Flying Snake *Chrysopelia ornata*, Common Trinket Snake *Coelognathus helena helena*, Common Indian Rat Snake *Ptyas mucosa*, Checkered Keelback *Fowlea piscator*, Green Keelback (young) *Macropisthodon plumbicolor*, Indian or Spectacled Cobra *Naja naja*, Russell's Viper *Daboia ruselii*, Saw-scaled Viper *Echis carinatus*, and Bamboo Pit Viper *Trimeresurus gramineus*. The terminologies *oxyrhyncha* and *Fowlea* are recent changes (Purkayarsha et al. 2018; Mallik et al. 2020) - formerly the Green Vine Snake was *Ahaetulla nasuta* and the Checkered Keelback *Xenochrophis piscator*, which are available in field guides.

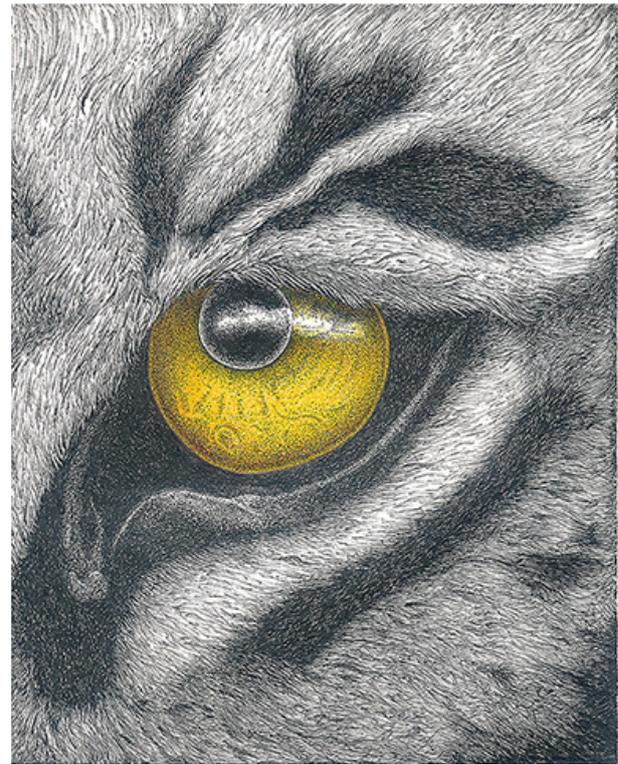
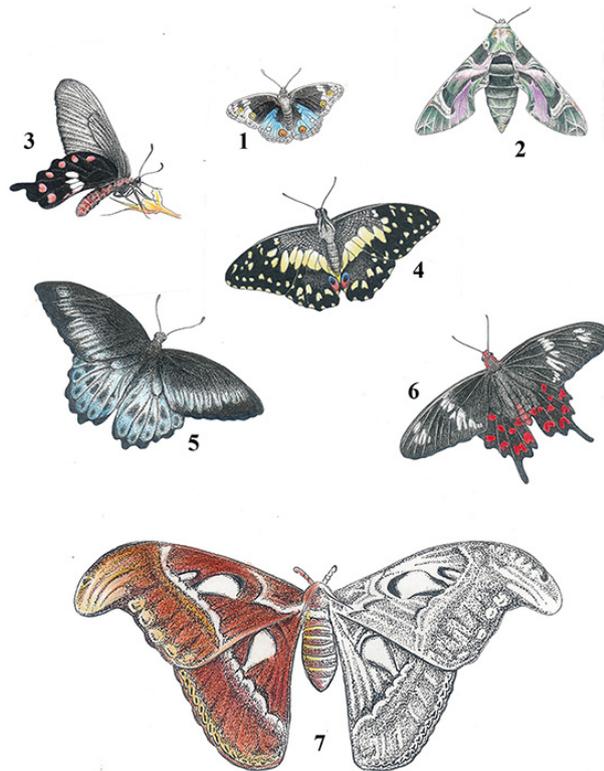


Image 5. Some specially commissioned works have been used to adorn walls. One such piece is this Tiger's eye, the property of Harry Marshall, CEO of ICON Films.

too use minimalistic colour <ericwatson.com>. There are quite a few more, but not many, as most monotone artists look upon black and white art as a purist art form stressing clarity of line which is not to be distracted by colour or any other media. In fact it was John Gould (1804–1881) who brought black and white together with colour. He brought bird illustration to fine bibliographical art using lithography, which enabled the artist to draw directly into stone giving a softer, more flexible line. The black and white prints would then be hand-coloured by teams of skilled colourists. He assembled a team of artists, including Edward Lear (1812–1888) and Joseph Wolf (1820–1899) <mallgalleries.org.uk/learning/resources/history-wildlife-art>

To the purist, combining black and white with colour may be considered to be 'rape' and the pontifical reality of puritanism does exist. The principal author too was a follower of that school until he discovered the joys of combining his forte with colour (the secondary author had a tough time trying to convince him for about a decade and a half to try his hand at combining colour with black and white). Combining black and white with colour may be heresy to the purist and be condemned, but we have enjoyed combining the two to give a



**Image 6.** We have experimented with the Lepidoptera (Butterflies and Moths) and results have been encouraging, though in most cases we had to show them in entire colour.

**Species depicted:** 1—Blue Pansy *Junonia orithya* | 2—Oleander Hawk Moth *Daphnis nerii* | 3—Common Rose *Pachliopta aristolochiae* | 4—Lime Butterfly *Papilio demoleus* | 5—Blue Mormon *Papilio polymnestor* | 6—Crimson Rose *Pachliopta hector* | 7—Atlas Moth *Atticus atlas*.

‘different’ effect.

Successful wildlife artists do use art to depict nature, and so do textile designers, interior designers, photographers, etc. But can this be constituted to

be ‘rape’ will be the eternal question. If one takes inspiration from nature does it mean we are raping it? In our opinion, nature has a way of influencing the human body, mind and, if something like it exists, the soul. Their success is their selling value but many give it back – for example, David Shepherd <davidshepherd.org> and Robert Bateman <batemanfoundation.org/gallery-education>

How many amateur artists paint for the simple joy of just creating something inspired by nature with no thought of financial profit? Here lies the crux, and if Pablo Picasso was consumed by the salability value of his pieces when he said what he said, it is his prerogative – suffice is to say his personal conclusion does not impress us.

## References

- Ganesh, S.R., R. Aengals & E. Ramanujam (2014). Taxonomic reassessment of two Indian sheildtail snakes in the *Uropeltis ceylanicus* species group (Reptilia: Uropeltidae). *Journal of Threatened Taxa* 6(1): 5305–5314. <https://doi.org/10.11609/JoTT.o3636.5305-14>
- Huffington, A.F. (1988). *Pablo Picasso: Creator and Destroyer*. Avon Books, 558pp.
- Mallik, A.K., A. Srikantan, S.P. Pal, P.M. D’Souza, K. Sanker & S.R. Ganesh (2020). Disentangling vines: a study of morphological crypsis and genetic divergence in vine snakes (Squamata: Colubridae: *Ahaetulla*) with descriptions of five new species from Peninsular India. *Zootaxa* 4874: 001–062.
- Purkayarsga, J., J. Kalita, R.K. Brahma & M. Das (2018). A review of relationships of *Xenochropis cerasegaster* Cantor, 1839 (Serpentes: Colubridae) to its congeners. *Zootaxa* 4514: 126. <https://doi.org/10.11646/ZOOTAXA.4514.1.10>
- Ramanujam, M.E. & J. Brooks (2011). Wildlife art and illustration: some experiments in Auroville, India. *Journal of Threatened Taxa* 3(4): 1702–1710. <https://doi.org/10.11609/JoTT.o2673.1702-10>
- Ramanujam, M.E. & J. Brooks (2014). Wildlife art and illustration: Drawing in ink - some experiments in Auroville India. *Journal of Threatened Taxa* 6(1): 5343–5356. <https://doi.org/10.11609/JoTT.o3717.5343-56>

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