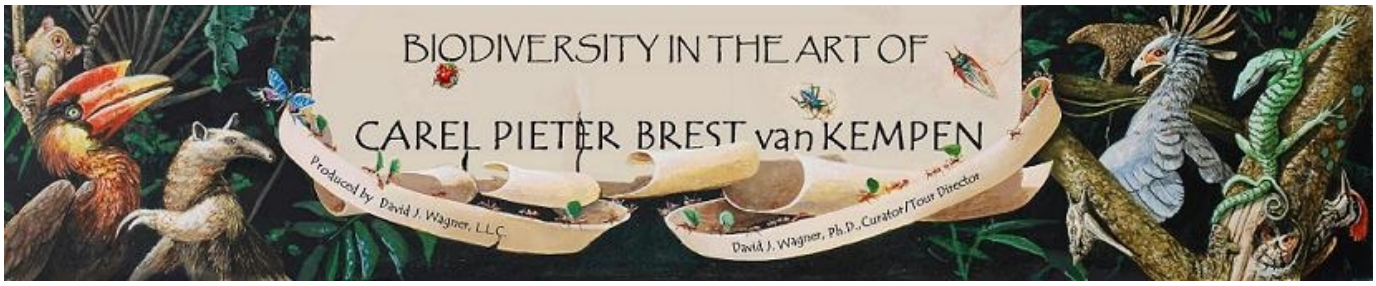


Sample Images and Texts

The thirty images below and their accompanying interpretative labels are samples taken from the **Biodiversity in the Art of Carel Pieter Brest van Kempen** exhibition. The full exhibition consists of some 50 original paintings and preparatory sketches that were inspired not just by the beauty of subjects found in nature, but also by the fascinating ecology of the subjects and their habitat.

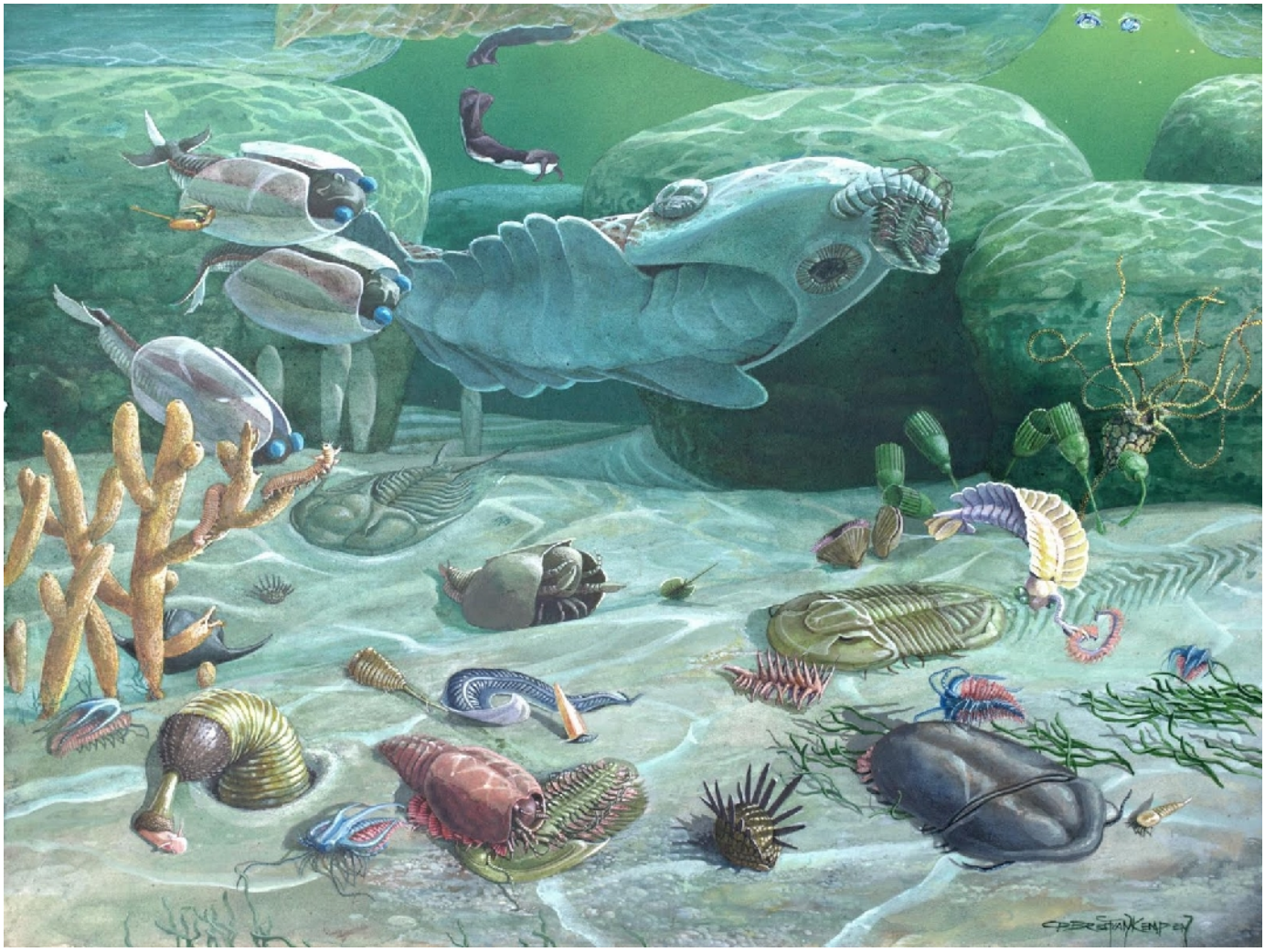
1. RIPARIAN RASHOMON—BRILLIANT FOREST FROG & AGAMI HERON (2009)
acrylic diptych on illustration board 15" x 20"; 15" x 20"

Two different viewpoints of the same event illustrate some of the common evasive strategies employed by frogs. The Brilliant Forest Frog (*Rana warszewitschii*) inhabits rain forests from Honduras to Panama. When resting upon leaf litter, its drab dorsal colors are cryptic, but bright yellow spots on its thighs flash when it leaps, and a glimpse of its brilliant underside is even more likely to startle and confuse a predator. Upon disappearing beneath the water's surface, it usually follows a wild, zig-zag course, ending up some distance from where the naïve viewer might anticipate. This painting's antagonist, the Agami Heron (*Agamia agami*), ranges through most of Tropical America, but does not occur in great numbers anywhere and is infrequently seen. Long of neck and short of leg, it haunts streams within heavy forests and feeds upon small fish and amphibians. Incidental subjects in this painting include a water strider (*Gerris* sp.), damselfly naiads (family Coenagrinionidae) and a White-necked Puffbird (*Notharchus macrorhynchus*).

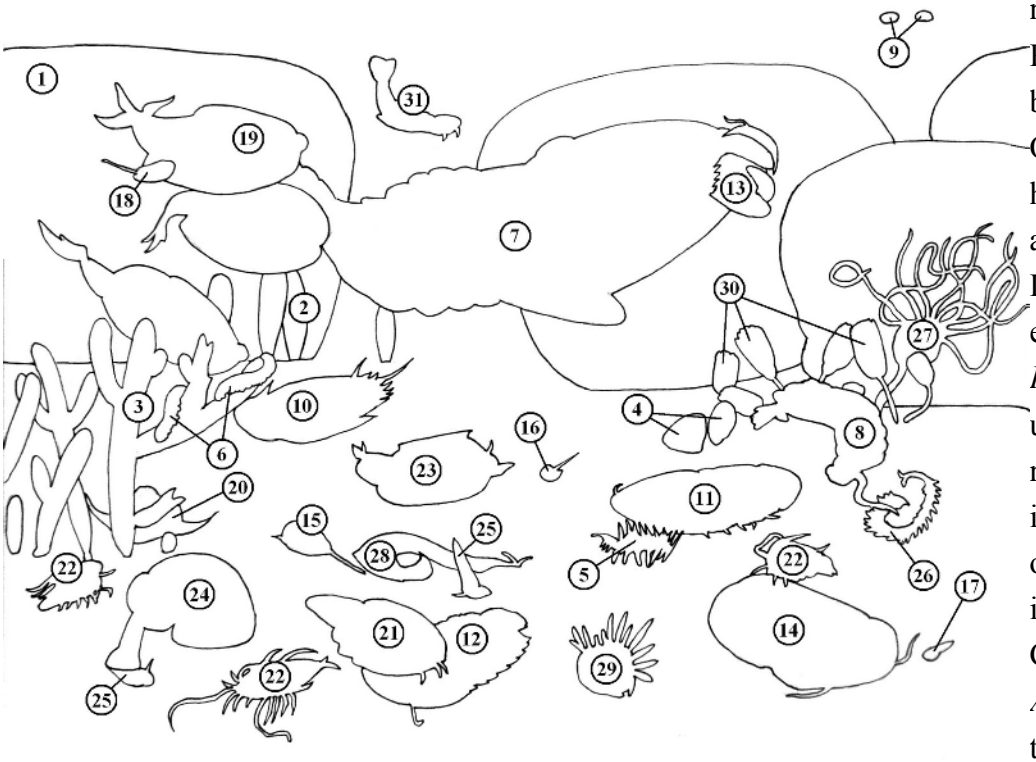
2. DUSKY-GILLED MUDSKIPPERS (2009)
acrylic on illustration board 6” x 12”

Life began in the sea and remained there for over 3 billion years. It's learned to thrive on land just as well, but occupying the intertidal zone, that strip between the two, continues to be a difficult trick, both ecologically and physiologically. High salinity, fluctuating tides, silty soils that are low in oxygen and nutrients, and harsh sunlight combine to make this zone a complicated and harsh living habitat. Among fish, the best adapted to this zone are the mudskippers, a subfamily of Old World tropical gobies. Capable of breathing air through their skin and mouth linings, mudskippers flop about the beach at low tide, foraging for small arthropods. At high tide, they mostly retreat to underwater burrows, where low oxygen and high ammonia levels would quickly kill most fish. This painting depicts a common Southeast Asian species, the three-inch long Dusky-gilled Mudskipper (*Periophthalmus novemradiatus*). Like most mudskippers, it is usually associated with mangroves, or intertidally adapted trees. Around 45 species of trees in ten genera and five families constitute the true mangroves, but plants from over a dozen other families are usually lumped into the designation as well, including a palm, a screwpine and a sedge. The many adaptations evolved by mangrove trees include numerous systems for storing gases and nutrients, and branching stilt roots and pneumatophores or “breathing tubes” rising from under the ground. Roots and stems are highly impervious to salts, and some species have evolved special glands for excreting excess salts. Many species engage in photosensitive leaf movements to limit evaporation. Mangroves form the basis for rich intertidal ecosystems called mangrove swaps or mangals. Incidental species in this painting include fiddler crab (*Uca* sp.), hermit crab (*Dardanus* sp.), a Reef Heron (*Egretta sacra*), terns (*Sterna* spp.) and a Lesser Frigatebird (*Fregata ariel*).

3. FAUNA OF THE BURGESS SHALE (1988-2011)
acrylic on illustration board 15” x 30”



British Columbia's Burgess Shale is one of the best-known and most important fossil beds. This half-billion-year-old formation has yielded an embarrassment of excellent fossils of soft-bodied creatures from what is frequently called the “Cambrian Explosion,” when suddenly—well, relatively suddenly—over the course of about 8 million years, the recently evolved multicellular, or metazoan organisms radiated into a multitude of different body plans, with representatives of most of the phyla that have ever turned up on the planet. For most of the preceding 3 ½ billion years, life on Earth had been unicellular. The cause of this explosion is poorly understood. Is it an illusion suggested by gaps in our knowledge of the fossil record? Was it caused by climatic or geological changes, or the evolution of Hox genes, sexual reproduction, predation or eyesight? Or was it simply a response to opportunities that could only be exploited by multicellular life? How about a combination of factors, or something else? By the beginning of the Cambrian period, 540 mya, stromatolites (1), formations of sediment trapped within layers of cyanobacteria and other microorganisms, had been common features of shallow seas for over two billion years. The appearance of grazing metazoans like trilobites and earlier creatures is thought to have been responsible for a major reduction of these structures during the Cambrian and Ordovician. True sponges (Phylum Porifera) appeared before the beginning of the Cambrian, and are represented here by *Leptomitus* (2) and *Vauxia* (3). Brachiopods (phylum Brachiopoda), which would reach an impressive peak of importance and diversity during the Ordovician, made their appearance with the Cambrian,



during which they probably remained fairly uncommon. Pictured is the articulate brachiopod *Billingsella* (4). One of the groups that may have given rise to the arthropods is the phylum Lobopoda, in which many experts include the bizarre *Hallucigenia* (5), which, until recently, was normally reconstructed walking upon its spines, with a single row of tentacles running down its back. A common Cambrian lobopod was *Aysheaia* (6), which is thought to have fed on sponges, with which its fossilized remains are frequently associated. Also related to the arthropods was the extinct phylum Radiodonta, which included *Anomalocaris* (7), a huge swimming predator that reached a yard in length, as well as the five-eyed, nozzle-nosed *Opabinia* (8). The best known arthropods of the Cambrian were the trilobites, which appeared early on in the period, and enjoyed great success well into the Devonian. Small, primitive agnostid trilobites like *Lejopyge* (9) proliferated during the middle Cambrian. Though shaped like bottom-dwelling (benthic) animals, their wide oceanic distribution is suggestive of a free-swimming (pelagic) lifestyle. Perhaps they lived on the water's surface, floating on little air bubbles and filter-feeding on microorganisms. The corynexochid trilobites comprised a diverse and successful order, one of the best known of which was *Olenoides* (10). Another large trilobite order was the Ptychopariida, which included *Asaphiscus* (11), the very common *Elrathia* (12) and *Modocia* (13). *Naraoia* (14) was an unusual trilobite, if indeed it even belongs in that taxon. Among the arthropods whose taxonomic affinities are unclear are the benthic (bottom-dwelling) *Habelia* (15) and *Burgessia* (16) and the backswimming *Sarotrocercus* (19). The crustaceans also appeared during the Cambrian. Included in this group are the backswimming *Odaraia* (18), the enigmatic phyllocarid *Pseudoarctolepis* (20), and the crayfish-like *Canadaspis* (21). One of the most common arthropods of the Cambrian was the lovely little *Marella* (22), which may have been related to *Branchiocaris* (23). Members of the phylum Priapulida, very much like the burrow-dwelling *Ottoia* (24) still persist today. *Ottoia* fossils have been found containing prey like the hyolithid mollusc *Hyolithes* (25) (phylum Mollusca). The early segmented worm *Canadia* (26) (phylum Annelida) seems quite similar to some modern polychaete worms. The echinoderms comprise a large and important phylum that first arose in the early Cambrian. The primitive *Gogia* (27) was related to modern sea lilies. Our own phylum Chordata was represented in the Cambrian by the wormlike *Pikaia* (28), which was anatomically similar to modern lancelets. Some of the unusual Cambrian animals whose affinities are hard to place include the common armored *Wiwaxia* (29), the sessile *Dinomischus* (30) and the pelagic *Amiskwia* (31).

4. DISCOURAGER OF HESITANCY--KING-IN-HIS-CARRIAGE ORCHIDS (2012)
acrylic on illustration board 15” x 7½”

For plants, sex is largely a crapshoot. Early flowering plants increased the odds of transferring their male gametes to a receptive ovary from the appropriate species by producing nectar to lure insects and other mobile animals that inadvertently transported pollen from one plant to another. This made it possible to invest less energy to producing masses of pollen, but producing nectar is also energy-intensive. Certain plants living in nutrient-poor conditions circumvented this problem by deceiving their pollinators. This strategy has become especially elaborate in the orchid family, where thousands of species rely on pollination vectors that are lured to the flowers by color or scent cues, without the nectar payoff. A European orchid genus and nine Australian ones use sexual deception. In these cases, a male wasp must try to copulate with the flower in order to pick up pollen and to transfer it as well. The flowers produce pheremones attractive to an insect; each orchid species attracts a different insect species. In some cases, the exact same compound is produced by orchid and wasp, and is found nowhere else in nature. The flower also bears some physical resemblance to a female insect. The little hammer orchids (*Drakaea* spp.) of southwestern Australia attract wasps of the family Thynnidae. The most widespread of the hammer orchids, the King-In-His-Carriage (*D. glyptodon*), grows in sandy heath and is pollinated by the wasp *Zapilothynnus trilobatus*. The flightless female wasp climbs a sedge blade or other plant when receptive, and waits for a flying male to whisk her off. Here she bears a modest resemblance to the warty dark labellum of the King-In-His-Carriage sitting atop its slender stem. When a male thynnid wasp attempts to carry off the flower's labellum, the hinged stem knocks the insect into the column, dusting the wasp or the stigma with pollinia.

5. GOSTOSO!--MANED WOLVES & THREE-BANDED ARMADILLO (1997)
acrylic on illustration board 20" x 30"

The imperative to avoid being eaten is one of the prime drivers of evolution. Protective armor can be an effective defense, and it has evolved independently in numerous animal groups. Its main liability is in adding weight and reducing flexibility, limiting the creature's ability to flee from predators. Among modern mammals, this defense is the specialty of the South American armadillos, whose success is confirmed by the family's northward expansion over the past few million years, leaving two species in Central America, one of them ranging well into the United States. Best protected are the two species of three-banded armadillos (*Tolypeutes* spp.), which can roll up into perfect plated spheres. In this painting, the fortification of the species *T. matacus* is being tested by a pair of gangly, knock-kneed Maned Wolves (*Chrysocyon brachyurus*). These unusual canids of the South American plains have no close living relatives. Despite their exceptionally long legs, they are not particularly fleet of foot, but probably benefit from them by being able to see over tall grass. Normally solitary hunters, during the breeding season mated couples often forage together. The Maned Wolf's diet consists of small mammals, birds, reptiles, insects and fruit. The title of this painting, “Gostoso,” is a Brazilian soccer cheer, roughly the Portuguese equivalent of “tasty.” Incidental subjects include Pampas Grass (*Cortaderia argentea*), Spiny Tree Lizard (*Tropidurus spinulosus*), Yellow-headed Caracara (*Milvago chimachima*), spinetail (family Furnariidae) and Black Howler Monkey (*Allouatta caraya*).

6. GREAT PIED HORNBILL (2001)
acrylic on illustration board 30” x 20”

The hornbills comprise a family of tropical Old World birds that are related to kingfishers, but very similar in appearance and habits to the New World toucans, which are more closely related to woodpeckers. This is one of many examples in nature of convergent evolution, where two unrelated animals occupying similar niches evolve similar forms. Harder to explain is the fact that threough mucch of their range in Asia, hornbills are known by the Malay name “tucan,” the same name given to their South American analogs by the Tupi Indians. Probably the best known hornbill is the Great Pied Hornbill (*Buceros bicornis*), which ranges from India through Sumatra and has been a rather common aviary bird for many years, having been bred in captivity since 1953. Like most hornbills, these are essentially forest birds, exploiting a number of different forest types up to an elevation of about 2000 meters. Usually occurring in pairs or small family parties, these birds sometimes congregate in groups of over one hundred to feed in large fruiting trees. Fruits, mostly figs, make up the bulk of their diet. During the breeding season the male bolsters the growing nestling's protein supply by delivering extra animal matter to the nest hole, where the female remains sealed until the chick is about half grown.

7. BLACK SKIMMER (2003)
acrylic 22" x 30"

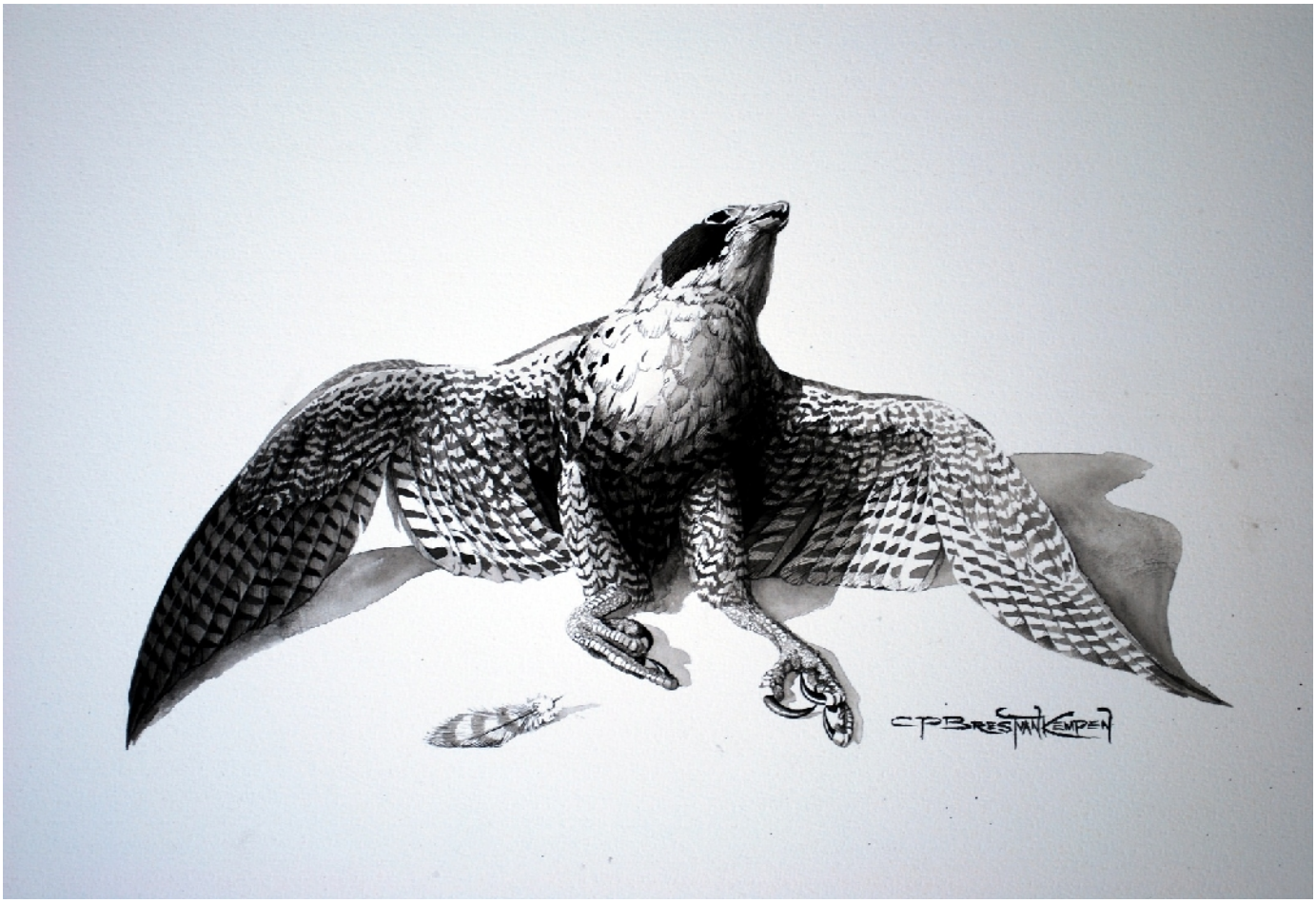
The peculiar skimmers are related to gulls and terns, and live near fresh or saltwater bodies in the warmer regions around the globe. The three species, one African, one Asian, and one American, are all quite similar in appearance and behavior. The lower mandibles of these birds are much longer than the upper -- an adaptation well suited to their unique method of foraging. A feeding skimmer flies just above the water, plowing the surface with its lower bill. When a fish is encountered, it is snapped up and consumed. Another peculiarity of the skimmers is the presence of a vertical pupil, which is found in no other bird. This allows greater control of light entering the eye, which is useful to fowl that spend a lot of time resting on white sands reflecting the tropical sun, but which also regularly feed at night. They nest in a small scrape on a sandy beach; the female usually lays 3 to 7 eggs. The Black Skimmer (*Rynchops niger*) ranges along the Atlantic coast of the Americas and along rivers from the southeastern U.S. to Brazil and from southern California to Peru along the Pacific. It also nests along the Sea of Cortés

8. REANIMATION—COMMON POORWILL (2012)
acrylic on illustration board 30" x 20"

Hibernation is one of the more effective strategies temperate animals have developed to survive winter's cold temperatures and lack of food resources. Many birds, bats and even insects opt instead for seasonal migration, exploiting distant habitats during different seasons. A few, like the Monarch Butterfly (*Danaus plexippus*) and the Poorwill (*Phalaenoptilus nuttallii*) use a combination of the two. Poorwills, relatives of nighthawks, breed in arid parts of western North America from southern Canada into northern Mexico; northern individuals seem to winter in the desert southwest. A number of bird species use daily torpor to minimize energy loss during cool nights or brief bad weather. Members of three related orders, the goatsuckers, hummingbirds and possibly the swifts, all show some abilities at metabolic adjustment, but none to the degree of the little Poorwill, which, in addition to its natural tendencies toward torpor, feeds heavily on beetles, rich in polyunsaturated fats, which remain liquid and metabolically available at low temperatures. In the laboratory, Poorwills have been observed sustaining periods of torpor for over 80 days, and in the wild as long as 25 days. A shallow shelter, open to the southern sun is selected: a patch of cactus or rock niche to which the bird develops substantial fidelity. After sundown, the torpid Poorwill's body temperature begins to fall, until the ambient temperature reaches 5.5?C, an apparent optimum hibernating level which the bird tries to maintain. Solar radiation raises the body temperature daily, presumably allowing the option to forage during warm nights. I know of no human witnesses to a Poorwill rousing from torpor in the wild, but I imagine the bird backing out of his shelter to fully bask in the final evening rays, periodically flapping his wings to elevate his body temperature. It's not known how severe a winter these birds can survive, but a sufficient winter insect population, rather than temperature, is probably the limiting factor. Rather than showing the kind of country where Poorwills are known to commonly winter, I tried in this painting to depict a habitat in the harshest extreme that I could imagine the bird toughing out. Also shown reviving are Glacier Lilies (*Erythronium grandiflora*), Convergent Ladybird Beetles (*Hippodamia convergens*), Western Boxelder Bug (*Boisea rubrolineata*), and snowfleas (*Hypogastrura* sp.), cold-adapted springtails that climb onto the snow's surface to feed on algae.

9. STARGAZING--PEREGRINE FALCON (2008)

India ink wash on paper 21" x 30"



Damage to a bird's central nervous system from injury or poisoning often manifests itself in a behavior known as stargazing. Affected birds exhibit unsteadiness and a backwards craning of the head. Terrible though this gesture appears, it does not always herald doom for its sufferer; it can be a symptom of numerous temporary or transitory maladies. Animals like the cosmopolitan Peregrine Falcon (*Falco peregrinus*), which feeds heavily on seabirds, are especially prone to poisoning by persistent environmental toxins, by virtue of their place in the feeding hierarchy. Rains wash poisons into the sea, where they accumulate in organisms and concentrate as they rise from one trophic level to another. For example, the mercury level in the tissues of a population of medium-sized fish can be expected to be far higher than that in the population of small fish they feed upon, and far lower than in the big fish that feed upon them. During the 1950s and '60s, many populations of Peregrine Falcons crashed due to poisoning from the persistent pesticide DDT, which stimulated production of two enzymes in the birds that broke down calcium carbonate, the compound that forms eggshells. The resulting thin-shelled eggs usually broke before hatching. The worldwide banning of DDT for agricultural use and a rigorous captive breeding and reintroduction program have restored this bird back to healthy numbers.

10. LANJAK DAWN—CROWNED FLYING LIZARDS & ORANG-UTAN (2009)
acrylic on illustration board 20" x 30"

One of the biggest difficulties with an arboreal lifestyle is getting around. Even in the thickest forests, the canopy is rife with gaps between individual trees, caused by wind abrasion. This phenomenon, known as crown shyness, discourages transmission of tree pathogens, permits light into the understory, and facilitates tree respiration. It also seriously complicates life for arboreal animals that need to disperse and forage without descending to the dangerous forest floor. This problem has encouraged many different animal groups to independently evolve patagia, or flying membranes to enable them to glide across these gaps. Among the most accomplished forest gliders are the twenty or so lizard species known appropriately as flying lizards (*Draco* spp.), which are distributed throughout Southeast Asia and the Philippines. Five or six pairs of false ribs support their flying membranes, which enable them to glide for many yards with amazing dexterity. I've seen them launch themselves from a tree, turn around, then return to the same trunk. In addition to their primary function, these often brilliantly colored patagia are frequently employed as signals to communicate with conspecifics. Towards the end of the dry season, the males establish territories, actively guard them, and begin displaying for females by extending their long throat dewlap and one or both patagia. The Crowned Flying Lizard (*D. cornutus*) ranges in wooded areas on Borneo, Sumatra, western Java and the Bunguran and Sulu Archipelagos, where it forages among the treetops for the ants and termites that make up the majority of its diet. In southern Sarawak, I found them in hilly, secondary forest. In the background of this painting, a large male Orang-utan (*Pongo pygmaeus*) calls from his sleeping nest. Other incidental creatures include a bark orb-web spider (*Caerostris* sp.), ants of the genus *Bothriomyrmex*, a lanternbug (*Fulgora* sp.), a Malaysian Bushbrown (*Mycalesis fusca*) and a Black and Yellow Broadbill (*Eurylaimus ochromalus*).

11. SPRAWL--OUSTALET'S CHAMELEON (2007)
acrylic on illustration board 18” x 24”

Ecological change is an important driver of evolution. Random change is detrimental to most organisms in a functioning ecosystem, but there is frequently a small minority that finds benefit in the change. The island of Madagascar, isolated since the Creaceous. is famous for its unique flora and fauna, much of which has diminished or been extirpated as humans altered the landscape. Rampant deforestation has been devastating for most of the islands wildlife, including most of its 70+ chameleon species. Two notable chameleon species though, seem to have benefited from deforestation: the Panther Chameleon (*Furcifer pardalis*) and in particular, the two-foot-long Oustalet's Chameleon (*F. oustaleti*), a species that thrives in deforested zones. Lean and limber, it's an active species whose tongue can snatch small reptiles, and even birds along with the large insects that make up most of its diet. In the trees it moves in typical chameleon fashion, but on the ground it can run quite quickly for a chameleon. Incidental species include Humans (*Homo sapiens*), Madagascan Brown Bat (*Neoromicia matroka*), Black Kite (*Milvus migrans*), Chicken (*Gallus gallus*), Red Fody (*Foudia madagascariensis*) and Lined Day Gecko (*Phelsuma lineatus*).

12. A BRICK HOUSE— HOUSE SPARROW & PAPER WASP (1992)
acrylic on illustration board 27" x 23"

Commensalism is a type of ecological relationship that lies between parasitism and symbiosis, that benefits one organism but has little effect on the other. A well-known example is the relationship between remoras of the family Echeneidae and the sharks and other predatory fishes that they adhere to. The remoras feed on scraps left over from the large predator and receive protection from them too. The effect of the relationship on the shark seems to be small, although, as in most commensal relationships, subtle effects probably do occur. There are many kinds of bacteria that form commensal relationships with Humans—also many that are symbiotic and parasitic. A number of animals are well known Human commensals. Among these is the House Sparrow (*Passer domesticus*), an originally Eurasian bird that has followed our species in its expansion across the globe. Although it occurs today nearly everywhere that Humans do, it is rare to see a House Sparrow far from Human habitation. It was introduced to North America just over 100 years ago. The most famous importation of House Sparrows was by Eugene Schiffelin, who attempted to introduce every bird mentioned in Shakespeare's works into Central Park. Most of these introductions failed, but within a century, House Sparrows spread throughout the Western Hemisphere, radiating into numerous niches, the big, dark sparrows of the Pacific Northwest contrasting with their brightly hued eastern kin and their small, sandy-colored brethren of the desert Southwest. In this painting the nesting microhabitat of a decorative brick is shared with a common paper wasp of the genus *Polistes*.

13. PHORESY—NEOTROPICAL PSEUDOSCORPIONS & HARLEQUIN BEETLE (2014)
acrylic on panel 14” x 9”

Leaving the home turf benefits an organism by sidestepping competition with relatives, and life has evolved countless interesting ways of dispersing. Pseudoscorpions are tiny arachnids, a few millimeters long, that can be found in just about any habitat, nearly anywhere on Earth, although because of their size, most people have never noticed one. Dispersing very far is difficult for such tiny creatures. Many small insects can fly. Some spiders, mites and caterpillars disperse by “ballooning,” floating on the breeze from a long strand of silk. Many pseudoscorpions and other small invertebrates disperse by phoresy, or commensally hitchhiking on a larger animal. The pseudoscorpion *Cordylochernes scorpioides* is habitually carried to better habitat on the back of a Harlequin Beetle (*Acrocinus longimanis*). Both animals are distributed widely through Tropical America. Like most other long-horned beetles, the larval Harlequin Beetle is a wood borer. After metamorphosis, the adult beetle emerges to the mossy surface of the dead old tree in which it spent its youth. This is the habitat of *C. scorpioides*, which preys on small arthropods. Upon sensing a Harlequin Beetle, a pseudoscorpion will approach it and pinch its abdomen, causing the beetle to lift its wings and allow the smaller animal to climb underneath them. A male *C. scorpioides* will defend his patch of beetle back against other male pseudoscorpions, and mate with females there. A large, newly-dead tree is the preferred place for Harlequin Beetles to mate and lay eggs and for *C. scorpioides* to live, so the ride/rider relationship is an apt match. The pseudoscorpion species *Parachelifer lativittatus* also regularly rides on Harlequin Beetles, further up, on the sides of the thorax. Beneath the phoretic relationship depicted, a Margay (*Leopardus wiedii*) crosses the forest floor.

14. PASSENGERS OF FORTUNE--CARMINE BEE-EATERS (2005)
acrylic on illustration board 46” x 20”

Commensal feeding is related to parasitism, but its effects on the host are benign. It's also related to phoresy, but instead of a means of dispersal, the hitchhiker is exploiting a good feeding platform, like the remora on the shark. On land, the riders are usually birds hawking insects disturbed by a large mammal. The striking Northern Carmine Bee-eater (*Merops nubicus*) of the African Sahel feeds in the typical manner of bee-eaters: searching out flying bees and wasps from a perch, winging out to capture them in midair, then returning to the perch to dispatch and eat them. This species, though, has added a couple of other methods to its feeding repertoire, including diving for small fish like a tern, and riding upon the backs of large mammals and even birds like the Ostrich (*Struthio camelus*), and flycatching after flying insects like the Desert Locust (*Schistocerca gregaria*) that emerge from the grasses as the ride passes through. The lines between symbiosis, commensalism and parasitism are blurry, and there is often overlap between them. Commensal feeders like these bee-eaters are also apt to remove the occasional parasite, like the louse fly of the family Hippoboscidae that can be seen scuttling through the ostrich's feathers. These riders are true parasites, specializing in sucking the blood of their host. Many hippoboscid fly species feed specifically on one species of bird or mammal.

15. CONVOY THROUGH THE CANOPY—deBRAZZA'S MONKEYS (2000)
acrylic triptych on illustration board 30” x 20”, 30”, 20”

This painting depicts a relationship that's related to the commensal feeding of the remora and shark and the bee-eater and Ostrich, but is more symbiotic, that is, both parties experience a benefit from their relationship, transitory though it may be. One of the many African monkey species known as “guenons,” de Brazza's Monkey (*Cercopithecus neglectus*) inhabits various types of forest, usually near rivers, from southeastern Cameroon through the southern Central African Republic and throughout most of the former Zaire. Here we see a troop moving along a massive fig tree, accompanied by Long-tailed Hornbills (*Tockus albocristatus*) and Oil Palm Squirrels (*Protoxerus stangeri*). Both of these species habitually travel with monkeys, eating insects that are disturbed by their movement, such as the giant cicada (Cicadidae) in the right panel. The sharp-eyed hornbills return the favor by making a loud racket if they spot a Crowned Eagle, warning the primates of the presence of an important predator. I've taken some artistic liberties in this piece by depicting such a large group of monkeys so close to a small settlement of Humans, the most important monkey predator of all in Central Africa. Incidental animals in this piece include a Crested Chameleon (*Chameleo cristatus*), Bush Viper (*Atheris hispidus*), Black Kite (*Milvus migrans*), Great Blue Touracos (*Corythaeola cristata*), Gray Parrots (*Psittacus erithacus*), Palm Swift (*Cypsiurus parvus*), Red-rumped Tinker Bird (*Pogoniulus chrysoconus*), Snowy-crowned Robin-chat (*Cossypha niveicapilla*), Chestnut Wattle-eyes (*Platysteira castanea*) and Village Weaver (*Ploceus cucullatus*).

16. THREE MORE WORLDS— RAINBOW TROUT & OSPREY (1998)

acrylic on illustration board 30" x 20"

The Osprey *Pandion haliaetus*) is an unusual bird with no close relatives. It shares common ancestry with the hawks, eagles, kites and falcons, but so far it's been difficult to trace its lineage any more specifically than that. Fossils ascribed to the osprey genus go back at least 15 million years, and 30 million year-old osprey-like fossils have been found in Germany and Egypt. Its singularity has earned it its own family, Pandionidae, with but a single species (though some experts consider the Australian ospreys different enough to warrant species status). Few birds have a wider global distribution; ospreys range across every continent but Antarctica. The fact that these birds vary so little across the globe points to their wandering nature. Only a handful of animal species fit this evolutionary pattern; *Homo sapiens* is another one. It is extremely rare for an Osprey to eat anything that is not a fish, and this behavior has been important in its evolution. Its large, rugose feet with opposable outer toes are unique within its order, as are its nostril valves and its wings, which are structured very like those of other dive-fishing birds like pelicans and gannets: a case of convergent evolution. The Rainbow Trout (*Oncorhynchus mykiss*) is another creature with an expansive range, but its story is quite different. Originally native only to western North America in waters draining into the Pacific, it has proved to be an ideal species for captive propagation and transplantation as a game fish, and has been introduced throughout the continent and into waters as far away as New Zealand. This painting is in large part an overt theft of Escher's lithograph “Three Worlds,” in which the viewer gazes through leaves floating upon the water’s surface upon a koi beneath and reflections of trees above. I injected an aspect of impending doom by introducing the Osprey's reflection.

17. PRAIRIE SENTINEL-- PRAIRIE RATTLESNAKE & AMERICAN BISON (2002)
acrylic on illustration board 15” x 40”

Rattlesnakes comprise about 50 species in two unique American pitviper genera, all with tails that are tipped with a series of complex, interlocking, cornified scales, completely unlike anything else known to have been evolved by snakes—until very recently, anyway. These reptiles are not only specialized at their very tips; the musculature of the tail itself is dominated by three pairs of “shaker” muscles, two of which produce lateral, back-and-forth movements, while the third pair applies torsion, drawing the ventral edge of the rattle outward to either side. The fibers of these muscles are rich in mitochondria, sarcoplasmic reticula, capillaries and glycogen, and capable of sustaining the high respiratory levels necessary to vibrate the tail as rapidly as 100 Hz. for as long as an hour at a time. These speeds are comparable to the oscillations of sphinx moth wings. Among vertebrates, only hummingbirds can vie with the rattlesnakes in this respect. The rattling system's main function is to warn away dangerous animals like predators and large grazing animals, although in some of the small *Sistrurus* species, it is only audible at close range, and appears to be of little use in this area. Whatever the first proto-rattlers used their tails for, they probably enhanced an already existent behavior. Young rattlesnakes and even adult *Sistrurus* rattlers often engage in caudal luring, wriggling the tail to entice lizards and other potential prey to come in close. It is possible that early rattles enhanced this behavior. The tail of the recently discovered Iranian viper *Pseudocerastes urarachnoides* has an ornate tail lure that could be similar to the tails of early rattlesnakes. Then again, the first rattles may have been defensive. Many snakes, including some vipers, vibrate the tail defensively. When doing so against dry vegetation, the resulting sound is not unlike a rattler's. Defensive tail-shaking colubrids, like the Common Racer (*Coluber constrictor*), lack the specialized tail musculature, and cannot sustain the motion more than a few seconds, but the tail muscles of the Copperhead (*Agkistrodon contortrix*), a close cousin of the rattlesnake, have a significantly elevated respiratory capacity. The traditional view of rattler evolution posits that rattles evolved to enhance this behavior, and, since the earliest-known rattlesnake fossils were found in the American Great Plains, it's tempting to visualize the first rattler warding off vast herds of American Bison (*Bison bison*). Genetic mapping, though, strongly suggests that rattlesnakes first evolved in America's southeast, severely shaking this attractive theory. Today, the rattlesnakes are represented in the American Midwest by the Prairie Rattlesnake (*Crotalus viridis*). Incidental creatures in the painting include horseflies (*Tabanus* sp.) a metallic bee (*Augochlora* sp.), banded grasshopper (*Trimerotropis* sp.), skipper (*Epargyreus* sp.), Common Nighthawk (*Chordeiles minor*), Horned Larks (*Eremophila alpestris*), and a groundsquirrel (*Spermophilus* sp.).

18. GREEN IGUANA & LEAFCUTTER ANTS (2011)
acrylic on illustration board 18” x 24”

One of the best-known denizens of the Neotropics, the Green Iguana (*Iguana iguana*) is a large and successful herbivorous lizard found in a variety of forest types from Mexico to Paraguay. Approaching the iguana in familiarity are the 50 or so species of leaf-cutter ant, which share the lizard's expansive range. The species shown is Atta cephalotes. Leaf-cutter ants are unusual, but not unique among insects in their practice of agriculture. Four different types of workers maintain the colony. The largest type, the majors, function as soldiers, defending the colony from marauders. Next in size are the mediae, which spend the day foraging for fresh leaves, which they cut into nickel-sized pieces and bring back to the colony. The sight of a mass of green leaf fragments moving slowly across the forest floor, tilting rhythmically back and forth like butterfly wings, is a common delight of New World forests. Attending the mediae are the smaller minors and minims,which protect the foraging phalanx from predators and parasites. Inside the subterranean nests, the minim workers crush the leaves, which serve as a growing medium for fungi of the family Lepiotaceae, which feed the colony. Incidental subjects include the spectacular monocot *Heliconia pogonantha*, a Red-capped Manakin (*Pipra mentalis*) and the butterfly *Antirrhea pterocopha*.

19. ASCENSIÓN-- STRAWBERRY POISON FROG & TADPOLE (2004)
acrylic on illustration board 40” x 15”

To be evolutionarily successful, an individual organism must produce offspring that live long enough to produce another generation themselves. This requires an investment on the parents' part. One option is to lay out the energy to produce great quantities of young, most of which will be eaten by predators or otherwise fail to reach adulthood. Producing fewer young requires parental care to assure their long-term survival. Reproductive approaches that produce lots of young are known as r-strategies, those that depend on parental care are called K-strategies. Among vertebrates, the frogs exhibit the greatest diversity of reproductive tactics, including extreme cases of r- and K-strategies. Most notable of the K-strategists are the poison frogs of the family Dendrobatidae, a group of beautiful and tiny diurnal amphibians found throughout the American tropics, well known for producing complex alkaloid skin secretions. The Central American Strawberry Poison Frog (*Oophaga pumilio*) deposits several eggs on a leaf on the forest floor, which are guarded by the male. Upon hatching, the tadpoles wriggle onto the female’s back, and are taxied up the trunk of a tree to a pre-selected bromeliad, where they are deposited into one of the water vessels formed within the axils of these arboreal epiphytes. Every few days, the female lays an unfertilized egg for each of her offspring to feed upon. Incidental creatures in this painting include an Agouti (*Dasyprocta punctata*), a Spectacled Antpitta (*Hylopezus perspicallitus*), a Racerunner (*Ameiva festiva*), a Lanternbug (*Fulgora laternaria*), a Leaf-Footed Bug (*Anisosceles* sp.), a leafhopper (*Umbonia* sp.), a Consul Butterfly (*Consul fabius*), and numerous ants of the species *Pheidole bicornis*, which are dependent upon *Piper* trees, like the one immediately behind the frog.

20. PHANTOMS OF THE MOJAVE—BANDED GECKO (2010)

acrylic on illustration board 20" x 15"

One of North America's most interesting waterways is the Virgin River, which flows out of southwestern Utah to form part of the Arizona-Nevada border before emptying into Lake Mead. It represents a northerly extrusion of the Mojave Desert ecological community which meets the Great Basin zone to the northwest and the Colorado Plateau to the northeast. It hosts numerous species of plants and animals that are found nowhere else, eight of them considered endangered. The river and its gorge extend the ranges of dozens of other species a hundred or more miles to the north. This painting depicts four Virgin River specialties. The Western Banded Gecko (*Coleonyx variegatus*) occurs in a number of desert habitats. This strictly nocturnal lizard remains well hidden until after dark. On moonlit nights its translucent body almost gleams, and it's easy to spot as it stalks its arthropod prey, its tail writhing, catlike. Here the lizard descends the woody skeleton of a dead Silver Cholla (*Cylindropuntia echinocarpa*) before the nocturnal, trumpet-like blossom of a Western Jimsonweed (*Datura wrightii*), well-known for its toxic and hallucinatory effects caused by the alkaloids atropine and scopolamine. Also visible is a Jimson Beetle (*Lema daturaphila*), the adults and larvae of which feed on Jimsonweed and other members of the potato family, Solanaceae.

21. GREATER ROAD-RUNNERS & CANYON TOWHEE (2011)

acrylic on illustration board 15" x 40"

The cuckoos are an ancient and fascinating bird group that is at least 40 million years old. This group never seemed to produce any powerful fliers, and has tended to evolve into running forms. Despite this, it managed to colonize Australia, New Guinea and Madagascar. Many cuckoos are brood parasites, meaning they lay their eggs in the nests of other birds, to be raised by "Foster parents," but this is by no means universal. Cuckoos exhibit a variety of parenting strategies, including cooperative parenting in the anis and role reversal and polyandry in some of the coucals. Among the many cuckoo taxa are the Old World coucals, the Madagascan couas, the Asian malkohas, the American anis and perhaps the African turacos...maybe even the bizarre South American Hoatzin (*Opisthocomus hoazin*). Also included is that icon of the desert southwest, the Greater Roadrunner (*Geococcyx californianus*), one of two members of a genus found in Mexico and the southwestern U.S. The two species look and behave similarly, but the larger northern one has a longer bill and prefers more open country. Roadrunners are omnivores, feeding on fruits and seeds as well as large invertebrates, reptiles and small birds and mammals, which they run down. Most of the situations I paint are hypothetical but plausible, but this piece was based upon an event I witnessed in California's Anza Borrego State Park: a roadrunner carrying a small dead bird was running in the haphazard, zig-zag evasive mode typical of its species, barely keeping half a step ahead of the mobbing of two others. Unfortunately, distinguishing whether any of the fast-moving birds were adults or juveniles was beyond my capacity, and identifying the sex of a roadrunner under any circumstances requires nearly supernatural powers. My assumption is that I watched either two juveniles chasing a parent or a mated pair chasing a young, inexperienced bird. The former scenario is probably most likely, but it was the latter that I selected to commit to illustration board. I was unable as well to identify the focal point of the fracas, but decided that one of the nondescript brown towhees would serve as good a candidate as any. While taking artistic liberties, I also moved the setting slightly east, to the Sonoran Desert, and painted the scrub towhee of that region, the Canyon Towhee (*Pipilo fuscus*).

22. SOUTHERN CROSS—PENNANT-WINGED NIGHTJAR (1998)

India ink wash on paper 23” x 17”

A crucial ingredient to evolutionary success is the ability to find and attract a high-quality mate. This is so important that it's caused many animals, usually the males, to evolve outlandish ornamentation that is attractive indeed, but downright dangerous, too. Think of the peacock's long train that slows down his flight and impedes his ability to run through thick brush. Because really big ornaments are so risky, they almost always evolve in temporary integumentary derivatives like feathers that can be shed as soon as possible after the eggs have been fertilized. Among nature's most spectacular breeding adornments are the wings of the male Pennant-winged Nightjar (*Cosmetornis vexillarius*) of southern Africa. His inner primary feathers form a pair of “pennants” that can trail over two feet behind him. During his nuptial display he flies in low circles, emitting a strange katydid-like twitter. Finding an exposed perch like the termitarium in this painting, he then spreads his wings and slowly rotates them. Soon after breeding, the inner-most primary is dropped, but the rest of his moult does not continue until after the migration north of the equator for the austral winter, which often is executed in flocks. A member of the same order that includes the American nighthawks and whip-poor-wills, the Pennant-winged Nightjar feeds in the manner characteristic of the group, on insects captured in flight.

23. A KERANGAS FOREST FLOOR (2010)
acrylic on illustration board 30" x 20"

Of all of Borneo's varied ecosystems, perhaps none is more surprising than the biologically impoverished (by equatorial standards) dwarf forests that occur throughout the island, but more commonly in the west. The ecologist P. W. Richards called them “heath forests” after the similarly infertile lands of his native England, but they're better known by the Iban term *kerangas*, which means “land which will not support rice cultivation.” Kerangas soil is typically acidic, sandy and podzolized, or heavily leached. Essential elements enter the soil from decaying leaf litter, but most of these, magnesium, carbon, nitrogen and calcium in particular, leach away very quickly, and are only available in the top few inches. Phosphorus seems to leach away more slowly. Continual deposition of leaf litter is critical to the system, and disease, fire and logging or clearing for agriculture will convert kerangas to a barren habitat dominated by grasses and sedges known as *padang* (“field” in Malay). Despite the poor soil, healthy kerangas forests are dense with trees, most of them under 30 feet tall and three inches in diameter. In contrast to most equatorial forests, only a few species are represented. Dominant tree species usually belong to the mangosteen family, Clusiaceae, and to one or more of the genera *Cratoxylum*, *Calophyllum* and *Ploiarium*. Orchids show the greatest species diversity among kerangas plants, and terrestrial as well as epiphytic species are usually in evidence. Species of melastomes, laurels, myrtles and gingers are also commonly represented. Many kerangas plant species bear nitrogen-fixing bacterial nodules on their roots, and carnivorous plants also thrive. Borneo's kerangas forests are a center of diversity for the pitcher plant genus *Nepenthes*, which trap insects in leaves which are modified into water-bearing pitchers. At least one Bornean species, *N. rajah*, secretes a nectar that attracts tree shrews whose droppings are captured in the pitcher to nourish the plant. In perennially wet padang habitat, Bladderworts (*Utricularia* spp.) and Sundews (*Drosera* spp.) also trap small arthropods. Another famous kerangas denizen is the epiphytic ant plant (*Hydnophytum* spp.), which forms a symbiotic relationship with ants, providing them shelter, while receiving protection from the colony and nutrients from its wastes. This painting depicts a small patch of kerangas forest floor. Included in the leaf litter are shed leaves of the dominant tree *Cratoxylum glaucum* and shed needles of the podocarp (primitive conifer) *Dacrydium becarii*. Various mosses of the family Calymperaceae and the showy terrestrial slipper orchid *Paphiopedilum javanicum* grow from the soil and a single dried *Nepenthes ampullaria* pitcher sits on the floor while pitchers of *N. stenophylla* hang from epiphytic vines. Duméril's Monitor (*Varanus dumerilii*) occurs near rivers in various types of forest throughout the island. The hatchlings, like the one shown, are well-known for their striking coloration. It has been suggested that the colors, which begin to fade at the age of six weeks, mimic the dangerously venomous Red-headed Krait (*Bungarus flaviceps*), which shares its Southeast Asian range. Among Borneo's diverse and beautiful dragonflies, probably none is more conspicuous than the Red Swampdragon (*Agrionoptera insignis*), a member of the skimmer family, Libellulidae. Other subjects include the left-handed land snail *Dyakia kintana* and a Giant Forest Ant (*Camponotus gigas*), whose dimorphic workers forage for honeydew and other organic matter on the ground and in the canopy. At over an inch in length, the major workers of this species are among the world's biggest ants. Finally, a procession of *Longipeditermes longipes* termites returns to the nest with balls of lichen in tow. Both the workers and soldiers of this monotypic genus come in two sizes. Like other members of their subfamily, nasutitermes, the heads of the soldiers are distorted into nozzles, through which they can spray noxious chemicals at enemies, chiefly ants.

24. *OSBORNODON* (2006)
acrylic on illustration board 20” x 17”

The first carnivore-like mammals arose in North America during the last days of the dinosaurs, and radiated into a number of forms over the next 15 million years. In the early Eocene, around 50 million years ago, the first members of the modern order Carnivora appeared. Among the first of these were the early canoids, the ancestors to dogs, bears, and the weasel, raccoon and seal families. The first true canids appeared some 10 million years later. These very early dogs belonged to the now extinct subfamily Hesperocyininae, a group that included the longest surviving known dog genus, *Osbornodon*, which persisted from early in the Oligocene (about 34 mya) until the late Miocene (about 14 mya). It died out about 7 million years before the appearance of the first true dogs of the genus *Canis*. Six species of *Osbornodon* have been identified in various sites across western North America. They were fairly large animals, around 30 lbs., with short legs, big heads and long snouts. They probably hunted alone or in pairs. This painting depicts two *Osbornodon* digging after prey in the sage-covered Miocene hills of western North America.

25. BAT-EARED FOX (2006)
acrylic on illustration board 20” x 10”

The evolutionary history of the dog family is a complex puzzle that poses many interesting questions. Zoologists have traditionally relied on physical features alone to piece together phylogenetic relationships between living animals, but the recent advent of molecular analysis has forced a lot of rethinking of evolutionary affinities. The peculiar little Bat-eared Fox (*Otocyon megalotis*) is one of a number of modern canids that appear to have no close relatives. Because of its primitive-looking teeth, which are very small and numerous, it was long considered to represent an ancient line. Chromosomal studies, though, suggest that its odd dentition resulted from a fairly recent mutation, and that the species arose from an ancient fox lineage that also gave rise to the similar Fennec (*Fennecus zerda*) of North Africa and the cat-like American gray foxes (*Urocyon* spp.). Bat-eared Foxes are found in African steppes and savannas from Ethiopia and Angola south. Capable diggers, they excavate complex tunnel networks where they escape from heat and enemies and raise their litters of two to six pups. They feed on insects, mostly termites, with occasional vertebrate supplements.

26. AJOLOTE (2011)

acrylic on panel 14” x 9”

Just where on the reptile family tree to put the worm lizards, or amphisbaenians, has long been a puzzle for taxonomists. Traditionally lumped with the lizards, these days they're more often given their own suborder alongside the snakes and lizards. What ever their systematics, their appearance and habits share more in common with earthworms than reptiles. Spending most of their lives below ground, they progress with a worm-like, peristaltic movement of their body segments. On the surface they can move in a more typical serpentine fashion. Most amphisbaenians are found in tropical Africa and South America, but a few are found as far north as the Mediterranean, and in the Americas to Florida and northwestern Mexico. Unlike other amphisbaenians, the wormlike visage of the little-known Mexican genus *Bipes* is rather spoiled by the presence of a pair of stout digging forelimbs. Like the rest of their group, none of whom bear visible limbs, the 3-4 known *Bipes* species dig by forcing their hard little noses into the soil and moving them back and forth. The forelimbs are used to push loosened soil out of the way. They seem to subsist mostly upon termites and ants, and sometimes forage upon the surface at night. Two Bipes species occur in Michoacán and Guerrero, but the best-known of the group, *B. biporus*, is found in Baja California, where it is known as the Ajolote. A number of very poorly documented records from other parts of Mexico, Arizona, and as far north as Nebraska, suggest that it may be more widespread than believed. In this painting, an Ajolote forages about a rotting fencepost on termites of the genus *Reticulitermes*.

27. FLY RIVER TURTLE (2004)

acrylic on illustration board 18” x 24”

Looking for all the world like the Mock Turtle from Alice in Wonderland, the Fly River Turtle (*Carettochelys insculpta*) was described to science in 1887, some two decades after John Tenniel created his original illustrations of that character. It is the last remaining species of a turtle lineage that arose in Asia in the Cretaceous and spread to Europe, Africa and North America during the Eocene. It is more physically adapted for swimming than other modern freshwater turtles. Its resemblance to sea turtles is a case of convergent evolution, where similar pressures caused the same traits to evolve independently in two different groups. Living in slow-moving rivers of Southern New Guinea and Northern Australia, the Fly River Turtle is more herbivorous than most highly aquatic fresh-water turtles, supplementing its diet of aquatic plants and fallen fruit with snails and other invertebrates, carrion, and occasional fish, although the Red-striped Rainbowfishes (*Melanotaenia splendida*) skulking among the submerged snags have little to fear from the passing reptile. A dragonfly naiad (*Aeschna* sp.) clings to the same snag. Although it is protected in Australia, Indonesia and P.N.G., the Fly River Turtle has recently been smuggled out of those countries in large numbers for the pet trade. In just a couple of years this smuggling has exploded to the point that the World Wide Fund for Nature was moved to put the turtle on its “10 most wanted” endangered species list in September 2004.

28. CRASH-BARRIER WALTZER—BLACK-BILLED MAGPIE (2005)
acrylic on illustration board 30” x 20”

If nature is anything, it is energy-efficient, and in any ecosystem there is a place for scavengers. In unusual situations, like the Pleistocene plains of North America and some contemporary African savannas, there are enough large animals to sustain full-time warm-blooded carrion eaters, but the vast majority of larger scavenging animals are generalists, feeding on a wide assortment of foods, and in that respect, western North America's Black-billed Magpie (*Pica hudsonia*) is typical. Long considered a race of the Old World Magpie (*P. pica*), the American bird is now considered a distinct species, based on DNA evidence. Thriving in a variety of situations, these handsome corvids are common through most of their range. Despite their routine habit of feeding on road-killed animals, it is surprisingly rare to find one of these intelligent birds joining those ranks. Incidental subjects in this painting include Big Sagebrush (*Artemesia tridentata*), Mules Ears (*Wyethia amplexicaulis*), a garden spider (*Argiope* sp.), Differential Grasshopper (*Melanoplus differentialis*), Green Stink Bug (*Acrosternum hilare*), Blue Mud Dauber Wasp (*Chalybion californicum*), Convergent Ladybird larva (*Hippodamia convergens*), looper larva (*Autographa* sp.), Bushtits (*Psaltriparius minimus*) Green-tailed Towhee (*Pipilo chlorurus*), and Least Chipmunk (*Tamias minimus*).

29. HARRIS' HAWK & COMMON CHUCKWALLA (2006)
acrylic on illustration board 30" x 20"

Accumulations of rock make wonderful habitat for many lizard species. They provide a wide temperature gradient that makes it easy for the animals to thermoregulate, basking on a sun-exposed surface to elevate their body temperature and retreating into a cool crevice to lower it. Such crevices also afford safe fortification against many predators. Among the most rock-adapted reptiles are the five Chuckwalla species of the genus *Sauromalus*, found in the southwestern U.S. and northern Mexico, including a number of islands in the Sea of Cortez, where three described species are endemic. The Common Chuckwalla (*S. ater*) is typical of the group. With a high optimal body temperature, it spends a lot of time basking on exposed rocks, usually near a crevice which it will slide into at the hint of danger. If pressed, it will gulp air and inflate its body, making it quite impossible to pull out. Harris' Hawk (*Parabuteo unicictus*) is a unique raptor species of the American tropics. Normally shunning thick jungles, it haunts llanos, chaco, chaparral and scrub forest in the drier parts of that region, ranging as far north as the southern tip of Nevada. Fast and powerful, this social bird feeds on a variety of prey, from rabbits and ducks to reptiles. Incidental subjects in this painting include a Compass Barrel Cactus (*Ferocactus cylindraceus*), honey ants (*Myrmecosus* sp.), Desert Spiny Lizard (*Sceloporus magister*), Turkey Vulture (*Cathartes aura*), and Costa's Hummingbird (*Calypte costae*).

30. GREAT TINAMOU (1994)
acrylic on illustration board 27” x 22”

Tinamous comprise an order of chicken-like birds found in tropical America that is at least 17 million years old. Forty-seven modern tinamou species are placed in a single family. They are related to, and according to some authorities should be considered members of, the ratites, the group containing the Ostrich, Emu, Kiwis, Cassowaries and Rheas. Unlike those other birds, Tinamous have a keeled sternum and can fly, though not terribly well. It seems likely to me that ratites and tinamous derived from a common flying ancestor, and the rheas, ostriches and Antipodean ratites each evolved flightlessness separately, but this model is not universally accepted. Male tinamous select the nesting site, and frequently mate with multiple females, who lay their eggs in a communal nest. The male incubates the eggs and defends the young. The Great Tinamou (*Tinamus major*) is one of the most widespread species, ranging from Guatemala to Bolivia and central Brazil. Its beautiful turquoise eggs are laid between the buttresses of a large rainforest tree like this *Hymenolobium*. When a male with chicks is ill at ease, he strikes an odd posture, tilting body forward with rump in the air. Once apprehension turns to fear, he engages in a distraction display, running about wildly with wings spread and head held low. The haunting, mellifluous whistle of the Great Tinamou is a common evening sound in pristine neotropical lowland rainforests, and I tried to convey in this painting some of the mournful, mysterious mood it evokes in me. On the ground a Central American Jungle Runner (*Ameiva festiva*) basks while a yellow Eyelash Palm Pitviper (*Bothriechis schlegelii*) lurks in the foliage above. The huge liana draped about the tree trunks is the spectacular Monkey Ladder (*Bauhinia guianensis*).

INCIDENTAL SUBJECTS

Imagine seeing a rocky outcrop on the horizon and hiking out to it, its details of geology revealing themselves bit by bit as you approach. Closing in, you may spy a raptor or corvid nest, and upon reaching it, perhaps some lizards and interesting lithophytic plants. You begin to look beneath the flat stones around the base, inspecting the insects, maybe even finding a fossil or two. It is this wonder of exploration and discovery that thrills me with the natural world, and I hope to simulate that in a way with my work. The reaction I like to see best from a viewer is when they take interest in a painting from across the room and move in closer and closer, ultimately scrutinizing it from a few inches away. With this in mind, I like to pepper my pieces with interesting animal and plant species that might occur in the depicted habitat. Below are examples in details from four paintings: A) Convoy Through the Canopy (Gray Parrots) B) Gostoso! (spinetail and Black Howler Monkey) C) Harris' Hawk & Common Chuckwalla (Turkey Vulture) D) Prairie Sentinel (horseflies and Common Nighthawk.