



## H U S B A N D R Y

# The Pacific Boas: Natural History and Husbandry of *Candoia*

Christopher Carille

Garden of Eden Exotics &amp; Chris Carille Photography, New York, USA

Photographs by the author except where noted.

No other boas can be found within thousands of miles. They most likely had to raft across the Pacific to get to where they now reside. Triangular-shaped viper-like heads, up-turned snouts, no heat-sensitive pits, and thick-keeled scales with flattened bodies separate them in structure. Some are semi-fossorial and some have prehensile tails. Adult sizes range from a diminutive pencil-thin 40 cm to over 2 m. Like

many other boas, they live in rainforests with dense undergrowth, high humidity, and lots of rain and prey. However, these boas thrive equally well in dry grasslands, woodlands, plantations, and around human dwellings. The genus *Candoia* is like no other boid genus. They are unique in distribution and appearance, but are overlooked by herpetological hobbyists.

*Candoia* is one of 13 genera in three subfamilies in the family Boidae (Henderson and Powell 2007). Other familiar genera are *Boa* (boas), *Eunectes* (anacondas), *Epicrates* (West Indian and rainbow boas), and *Corallus* (Neotropical treeboas) of the Americas. However, snakes in the genus *Candoia* possess neither the size of *Eunectes*, the iridescence of *Epicrates*, the bright Technicolor coloration of some *Corallus*, nor the popularity of *Boa*. Jerry Conway, one of the first hobbyists to give *Candoia* a real chance, and the first innovator of their care, said it best: “[*Candoia*] are naturally beautiful ... there are no ‘morphs’ ... no man-made nonsense involved with *Candoia* at all ... they are underdogs of the snake world ... true, primitive wonders of the wild.” These boas are hid-



This Fiji Island Boa (*Candoia bibroni bibroni*) from Viti Levu is quite at home both on and off the ground. Photograph by Helen R. Sykes.



This female albino Viper Boa (*Candoia aspera*) was wild-caught at about 3 years of age. Photograph courtesy of Albinos Unlimited.



den gems that have been sitting out in the open. Husbandry is easy, as is properly determining the sex of individuals, which are naturally calmer than most of their relatives, naturally variable, and beautifully unique among the boids.

### Species and Subspecies

*Candoia aspera* (Viper Boa, aka New Guinea Ground Boa) is the best-known species. More frequently encountered in the reptile industry than its congeners, these snakes are relatively abundant throughout their range. They occur on their namesake island, New Guinea, on Irian Jaya, and on hundreds of other Indonesian islands and islets. Viper Boas are short and stocky, resembling death adders, and display a lot of variation in their coloring. They run the gamut from black and brown to orange, yellow, and gold, and can be blotched or banded. The most impressive individuals are fire-engine red with red ventral scales. These snakes have the thickest keeled scales of all *Candoia*, range in length from about 55 to over 90 cm (2–3 ft) as adults, and spend a lot of their time in their water bowls, although in nature they are completely terrestrial and even semi-fossorial. Two subspecies are recognized: *C. a. aspera* (Bismarck Ground Boa) and *C. a. schmidtii* (New Guinea Ground Boa).

Two subspecies of *Candoia bibroni* are recognized. *Candoia b. australis* (Solomon Islands Tree Boa) is probably



Two color phases in the Solomon Islands Tree Boa (*Candoia bibroni australis*).



Boas in the genus *Candoia* have characteristic thick, keeled scales, as seen in this Solomon Islands Tree Boa (*C. bibroni australis*; top) and this Pacific Ground Boa (*C. paulsoni*; bottom).

the second most well known species of *Candoia*, although not nearly as widely available as *C. aspera*. Solomon Islands Tree Boas are found throughout the islands, usually in coastal mangroves or cultivated areas. They vary considerably in color and pattern, with colors including reds, pinks, oranges, yellows, browns, grays, and black. Patterns may be blotched or splotchy, lacking altogether (uniformly colored), or with an almost zigzag dorsal stripe. Additionally, these snakes can become lighter or darker in the course of a day. I have seen individuals change from a dark brownish-red with heavy patterning to a light pinkish-tan with faint patterning over the course of a few hours. The habits of Solomon Islands Tree Boas are almost completely opposite to those of the Viper Boas. They are arboreal 90% of the time, sometimes even draped over limbs in the classic fashion of a Green Tree Python (*Morelia viridis*). Their thin bodies lend themselves nicely to an arboreal lifestyle, where they can stretch across and move between branches with ease. Only rarely will you encounter individuals coiled on the ground. Males range from about 90 to over 120 cm (3–4 ft) in length, while the larger females can exceed 180 cm (>6 ft).

*Candoia b. bibroni* (Fiji Island Boa) is known from Fiji, Samoa, Tonga, and other small Solomon Islands. These boas are mostly terrestrial, rarely climbing. Fiji Island Boas are dark



reddish-brown, usually with faint blotching or banding. Ventral scales on these boas are normally cream or brownish, but occasional individuals have red or orange ventrals. These are the



Ground colors vary considerably in Solomon Islands Tree Boas (*Candoia bibroni australis*) and can be bright orange.



These Fiji Island Boas (*Candoia bibroni bibroni*) from Teveuni Island typically have a distinct dorsal diamond pattern when compared to snakes from other localities. Photograph by Helen R. Sykes.



Fiji Island Boas (*Candoia bibroni bibroni*) from Viti Levu tend to have a dorsum more blotched than striped and venters variously marbled with black. These boas are the largest in the genus, reaching lengths exceeding 210 cm (~7 ft). Photograph by Helen R. Sykes.



Despite their common name, New Guinea Tree Boas (*Candoia carinata*) are not infrequently encountered on the ground.

largest boas in the genus; although males grow from about 90 to over 120 cm (3–4 ft) in length, adult females can exceed 210 cm (~7 ft). Relatively little is known about Fiji Island Boas, although they are protected throughout their range.

*Candoia carinata* (New Guinea, Pacific, or Waigeo Island Tree Boa) is by far the smallest and most variable in pattern of





Tiny New Guinea Tree Boas (*Candoia carinata*) clearly demonstrate the “viper-like” heads that characterize snakes in this genus.



Adult female New Guinea Tree Boas (*Candoia carinata*) reach much larger sizes than males (the female is on the left in this photograph)



Pacific Ground Boas (*Candoia paulsoni*) can get darker or lighter throughout the day (all three images are of the same individual).





The characteristic dark dorsal zigzag pattern is evident in this Pacific Ground Boa (*Candoia paulsoni*).

species in the genus. These snakes frequently are encountered on low shrubbery around human dwellings and plantations. New Guinea Tree Boas can be found climbing, coiled on the ground, and even burrowing. Individuals are usually blotched, with flowery patterning, but they can be striped, banded, or uniformly colored. Ground colors can be gray, tan, yellow, cream, or reddish-brown, with most a mottled gray and white similar to *Hyla marmorata* (the Marbled Tree Frog). Mottled individuals are quite cryptic, blending extremely well with tree bark. All individuals have a distinctive yellow-cream dorsal stripe just anterior to and a white ventral spot posterior to the cloaca. Adult sizes range from ~40–60 cm (16–24 in), and even the larger snakes are not much thicker than a Sharpie highlighter. Snakes from Waigeo Island are almost always brown and tan with a dark stripe running dorsally from the head all the way to the tip of the tail. Some individuals have a broken dorsal stripe. Some authorities have suggested that Waigeo Island *Candoia* are a separate subspecies of *C. carinata*, but this has not been verified. Two subspecies are recognized, *C. c. carinata* (Western New Guinea Tree Boa) and *C. c. tepedeleni* (Tepedelen's Tree Boa).

*Candoia paulsoni* (Pacific or Solomon Islands Ground Boa) prefers dry grasslands and wooded areas, but can be found on the ground and climbing through pineapple and coffee plantations. Background colors in this species run the gamut from red, gold, orange, and tan to bluish-brown. A few leucistic individuals have been found. Patterns consist of a dark dorsal zigzag from head to tail. The Isabel Island Boa (the prettiest of all *Candoia*), a possible subspecies, is a local pattern variant that usually has a white ground color with dark dorsal striping. Similar to *C. australis*, *C. paulsoni* has the ability to become darker and lighter throughout the day. Adults of this species average about 90 cm (~3 ft) for males and about 150 cm (~5 ft) for females. Six subspecies

are recognized, *C. p. paulsoni* (Solomon Ground Boa), *C. p. vindumi* (Vindum's Ground Boa), *C. p. tasmai* (Tasma's Ground Boa), *C. p. mcdowellii* (McDowell's Ground Boa), *C. p. sadlieri* (Sadlier's Ground Boa), and *C. p. rosadoi* (Rosado's Ground Boa).

*Candoia superciliosa* (Palau Bevel-nosed Boa) is the least known species of *Candoia*. Until recently (within the last ten years), these boas were considered a subspecies of *Candoia carinata*, therefore much of the information on them actually applies to the natural history of the New Guinea Tree Boa. They are found on the islands of Palau and Ngeaur (Angaur island). Adapting well to disturbance, these boas live in deforested areas, as well as banana and taro plantations. As with *C. carinata*, they are thin, arboreal snakes with prehensile tails that can be found in low shrubbery and on the ground. Coloration in the Palau Bevel-nosed Boa varies from yellow and red to black, with patterns of dull or brightly contrasting stripes, spots, mottling, or zigzags. These boas have the distinctive white spot behind the cloaca, characteristic of the New Guinea Tree Boa, and enlarged scales above the eyes. Two subspecies are currently recognized, *C. s. superciliosa* (Northern Belau Bevel-nosed Boa) and *C. s. crombiei* (Ngeaur Bevel-nosed Boa).

#### *Candoia* in the Reptile Trade

Captive bred-and-born *Candoia* are virtually impossible to find, and this does not bode well for conservation. I am not a tree-hugging conservation nut — I've worked for tree companies, clearing acres of land; keep dozens of snakes; and create a huge carbon imprint with all of my traveling. I am, however, against the importation and exportation of many species. Animals suffer and many die or are ill, malnourished, or infested with parasites. Inadvertently imported mites can infect otherwise healthy individuals in collections. I believe



Teeth of Solomon Islands Tree Boas (*Candoia bibroni australis*), like those of many boids, are capable of firmly holding and facilitating the swallowing of prey — and of delivering a painful bite.

that small numbers of popular species should be imported, bred, and distributed. Whatever can be done to limit deaths, minimize parasitic infections, and increase the numbers of healthy, “tame” snakes in the trade is the best option. Snakes make great pets, but without conservation we cannot maintain viable wild populations. I would hate to see a species disappear from the wild because I wanted to put a snake in a tank just to admire it. That said, almost all available *Candoia* are wild-caught, are usually dehydrated, and many come infested with mites or other parasites.

With the exception of *C. aspera*, *Candoia* are naturally calm, but you want to look for an individual that looks healthy and is active when held. You should try to buy your snake from a vendor that has some knowledge of the species rather than a person who can only tell you the country from which it was exported. As with all new snakes, they should be quarantined, rehydrated, and left alone until they acclimate. Once home, I'll soak the snake in a water bath to rehydrate it. This means putting the snake in a Rubbermaid container for a few hours with a few inches of clean water and a branch on which it can climb. After rehydration, I hold new individuals in a separate room for two to four months, checking for mites and other illnesses (and treating them as necessary) before I merge them into the rest of my collection.

*Disposition.*—Almost all *Candoia* are hesitant to bite, and if they do, it is only to determine what you are (i.e., to see if you're tasty). *Candoia b. australis* rarely ever bites unless you are restraining it; *C. carinata* will bite for the same reason, but is so small that it can barely bite a pinky finger; *C. b. bibroni* and *C. paulsoni* will bite when unsettled, but most will sit still for a cage cleaning as long as they are not moved too much. Contrary to all the other species of *Candoia*, *C. aspera* can be downright mean. They are by far the *Candoia* most inclined to bite. However, as with all snakes, captive-bred individuals will almost always be more docile than individuals that are wild-caught, and even the latter can be calmed if handled frequently and gently.

*Morphs.*—Until the end of 2011, no *Candoia* morphs were known (other than a single leucistic *C. paulsoni* with which Jerry Conway had been working). Recently, several albino projects have popped up. Albinos Unlimited, Inc. announced the importation of a wild-caught albino *C. aspera*. If all goes well (and if the trait proves to be recessive), albinos should enter the hobby within the next couple of years. Another private hobbyist is currently working with possible het albino Isabel Island Ground Boas (*C. paulsoni*) and hypomelanistic *Candoia* sp. Still another private hobbyist is working on producing calico *C. aspera* from a dark male with random orange and white splotches. Lastly, although I am not aware of any proven lines of hypos, some hypo *C. carinata*, *C. aspera*, and *C. b. australis* are floating around in private collections.



This rather elaborate enclosure is home to several Solomon Islands Tree Boas (*Candoia bibroni australis*). It consists of a 40-gallon breeder tank turned upright and equipped with climbing vines, a birdhouse with fake vines as a makeshift hide and hangout, climbing mesh, a big water bowl, and tropical sphagnum and peat substrate to help maintain humidity. Temperature and humidity are more difficult to control in such a large container and need to be carefully monitored.



### Husbandry

*Housing & humidity.*—Adults can be kept in 20 to 50-gallon aquaria, dependent on the size of the snake. *Candoia paulsoni* and *C. bibroni* will utilize larger enclosures, whereas the more diminutive species will be comfortable in smaller tanks. The tanks should have secure tops since *Candoia* will surely test their enclosures for escape routes. Large water bowls are also a must to allow the snakes to soak. *Candoia aspera* can often be found soaking throughout the day.

Humidity should be kept at 50–80% with daytime temperatures around 85°F. A temperature gradient should be created using a heat lamp or outside-of-the-tank heating mat, with a hot spot at 90°F. Nighttime temperatures should not drop below the mid-70s. The cage should be misted two or three times a week to allow snakes to drink water off the sides and help with shedding. A healthy *Candoia* will shed about once every two months.

Provide plenty of branches for climbing and two or more refugia at different heights. Arboreal species, such as *C. b. australis* and *C. carinata*, are better housed in taller terraria in which they can climb higher. The more terrestrial species, such as *C. paulsoni* and *C. aspera*, can be housed in shorter terraria equipped with a thick substrate into which snakes can burrow. Many people like Aspen tree shavings, but I particularly like Zoo Med Repti Bark (fir tree pieces) for its control of “snake smell” and its ability to hold moisture. *Candoia* are

all ambush predators and will use the branches to wait in a coiled “S,” burrow and wait for prey to come by, or sit by the entrance of their hide and strike when prey is in range.

*Feeding.*—Adults should be fed once every three weeks. They have a fairly slow metabolism and can go off feed for months without losing large amounts of weight. Most will eat more frequently — my adults will eat two adult mice every 15–20 days, but you need to watch that they do not become overweight. Also, when dealing with a new acquisition, wait at least one week before offering food. This time allows the snake to acclimate, without which it can become stressed and go off feed permanently.

Since *Candoia* are nocturnal and hunt mostly at night, appropriately sized prey should be offered after dark. Food items should only be slightly larger than the diameter of the snake. If the food item is much larger, regurgitation is likely. Cutting slits in the skin of the food item will speed digestion.

Most adult *Candoia* readily accept rodents. For example, *C. b. australis* and *C. b. bibroni* will eat rodents, but many individuals favor birds (chicks and quail are favorites). *Candoia carinata* and *C. paulsoni* may be picky and eat only lizards or tree frogs (*Hemidactylus* spp. and *Hyla* spp. are the easiest to obtain). I imagine that *C. superciliosa* follows suit since they are so similar to *C. carinata*. Viper Boas (*C. aspera*) are the easiest to feed. As the most terrestrial of its congeners, its diet probably includes more rodents than those of the



Except for Viper Boas (*Candoia aspera*), species in the genus *Candoia* tend to be slender-bodied snakes capable of exploiting a number of lifestyles, including arboreality. This is *Candoia carinata*.



This Fiji Island Boa (*Candoia bibroni bibroni*) from Kadavu Island is shedding. Note the elevated perch. Photograph by Helen R. Sykes.

other species. Consequently, most individuals readily accept frozen/thawed rodents.

### Breeding

Start cooling your *Candoia* in early November, gradually dropping night-time temperatures 2–3°F each week until they reach ~68°F, while keeping the daytime temperature around 83°F. This regimen should be maintained for two months before increasing temperatures back to normal. Once the cooling period is done, introduce multiple males into a female's enclosure. Males should be at least three years old, while females should be at least four years old. I am in no rush when it comes to breeding. Losing a snake because it was overly stressed by being bred when too small or too young is not a recommended tactic.

**MULTIPLE MALES, MULTIPLE MALES, MULTIPLE MALES!!!** When breeding *Candoia* you need to use three to four males per female. One or two males might work, but the odds of successful mating greatly increase when three or more males are engaged. Of course, you need to monitor the snakes carefully since “wrestling,” a series of twisting and constricting motions, may occur between the males and

you don't want any of them being injured. After some competition, the winner is selected. If a male has paired with the female, remove the other males. Copulation may take place for a couple weeks, after which the female will become noticeably swollen. At this point, I leave the male with the female for another week to ensure that the female is gravid. Most of my *Candoia* will breed throughout January.

Gestation lasts up to nine months in *Candoia*, during which the female may go off her feed for weeks or even a couple of months. If your female continues to feed, use smaller prey items than you normally would to prevent regurgitation. During this period, many females avoid the hot spot, so care should be taken to ensure a heat gradient throughout the enclosure. Since gestation lasts so long and females may go off feed during much of the pregnancy, they should only be bred once every two years. Giving them a year off allows them to recoup the lost body weight and get back to breeding size without undue stress.

### Neonate Care

*Candoia*, like all boas, are viviparous. They give birth to anywhere from two to over 70 live little wrigglers. For the most





Male Solomon Islands Tree Boas (*Candoia bibrioni australis*) have spurs that allow for accurate sex determination even for neonates.

part, neonate care is identical across the genus, what varies is the number of babies that will require care. *Candoia carinata* produces small litters of two to six offspring, whereas *C. bibrioni* and *C. aspera* produce litters of intermediate size (3–35) and *C. paulsoni* and *C. superciliosa*, with 20 to upwards of 80 and 12 to 50 young, respectively, produce the largest litters. Outliers exist, and as in most snakes, litter size is extremely dependent on the size, age, and health of the parents.

You can sex most neonates immediately by looking for spurs — in most species of *Candoia* they will be clearly evident in males and absent in females. You will want to house them individually in small enclosures as cannibalism has been reported. Size will depend on the species, but generally a 5-gallon aquarium is adequate. Make sure any holes are too small for the neonates to escape. Using a paper-towel substrate facilitates cleaning and ensures that no wood chips or debris will be accidentally ingested. Temperatures should be a few degrees cooler during the day than what is provided for adults, maxing out around 86°F. As always, a temperature gradient should be provided as much as is possible in a small enclosure so the snakes can thermoregulate. Humidity should be kept at 50–70%, with cage misting two to three times a week and a

water bowl deep enough for soaking. A small hide and some climbing branches complete the enclosures, providing neonates with a place of security and a location to wait for prey.

Neonates will shed their skin immediately after birth, but you should not feed them for at least two weeks. At this time, small pinky mice can be offered. Most neonates, especially *C. b. australis* and *C. carinata*, will refuse this first offering. Some neonates may be too small to comfortably eat a pinky mouse (*C. carinata* is born about as long as a pinky finger and as thin as a piece of string). Since *Candoia* feed on lizards in the wild, gecko tails can be used to initiate feeding. You could also start them with mouse tails or assisted feeding methods, but I would strongly suggest the latter only for an experienced keeper. After feeding gecko tails for two cycles (every two weeks), no food should be offered for three weeks and a lizard-scented pinky mouse should then be offered. This usually does the trick in starting neonates on mice. In some cases, neonates will still refuse food and will have to continue to be fed with lizards. Other hobbyists have reported feeding successes with earthworms, minnows, and even tuna fish.

Inhabiting hundreds of islands in the South Pacific, new species may be waiting to be discovered, the same way *Candoia* are waiting to be discovered by snake enthusiasts. Now, however, is the time to start keeping the more interesting species. Instead of following the crowd of people salivating over Ball Python morphs, become a more knowledgeable keeper. Add a *Candoia* to your collection. Help stop the importation of animals by adding captive-bred individuals to the hobby. Who knows, you may even find a new morph... Hey, that's what made Ball Pythons so popular!

#### Acknowledgements

Special thanks to my parents for giving me the opportunity and funds for schooling and for letting me explore my passion for herpetology; to my siblings Dan and Katie for putting up with my random requests to take care of my snakes when I'm away; to Lindsay, who has encouraged me to keep writing and re-read; and to Jerry Conway for offering a quote about his experiences with *Candoia*.

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