

## Inclusion of the Honduran spiny-tailed iguanas *Ctenosaura bakeri*, *C. melanosterna* and *C. oedirhina* in Appendix II

### Proponent: Honduras

**Summary:** *Ctenosaua bakeri*, *C. melanosterna* and *C. oedirhina* are three species of spiny-tailed iguana in the family Iguanidae endemic to Honduras. They are closely related to a fourth species, *C. palearis*, which is endemic to Guatemala and also proposed at the present CoP for inclusion in Appendix II (see proposal Prop. 12). Two other species in the genus (*C. similis* and *C. flavidorsalis*), not subject to any listing proposal, also occur in Honduras. There are around 15 currently recognized species of *Ctenosaura*, occurring in Mexico and Central America. Two species (*C. pectinata* and *C. similis*) reportedly exist as introduced populations in the USA.

*C. bakeri* is a medium-sized (55–83 cm) primarily arboreal iguana found in three areas of mangrove forest on Utila Island. Its total range is estimated at 10 km<sup>2</sup>, although nesting is confined to some 100 ha of beach habitat. Recent mark-and-recapture studies found high population densities (24–103 individuals per hectare) and estimated an overall population of 42 000–68 000 adults, with a balanced sex ratio and large numbers of juveniles. Habitat loss is regarded as the primary threat to the species, it having apparently been affected by wetland drainage leading to loss of mangrove habitat and beach side developments which destroy their breeding grounds. It is also exploited locally for food, with take having apparently increased in recent years. There is reportedly some potential threat from hybridization with *C. similis*.

*C. melanosterna* is a relatively large (70–90 cm), primarily arboreal, omnivorous iguana, endemic to the thorn scrub of the Aguán valley and tropical dry forest and subtropical dry forests of the Aguán valley and Cayos Cochinos Archipelago. The latter has a total land area of some 2 km<sup>2</sup>; area of distribution on the mainland is unknown but likely to be small. The species is said to be affected by habitat loss and hunting for food, although details are lacking. A population size of 2 000–2 500 has been suggested.

*C. oedirhina* is a relatively small (40–60 cm) iguana found on Roatán Island (13 000 ha) off the Caribbean coast of Honduras. The species is reported to be found in a wide range of habitat types on the island. The species is thought to be affected by habitat destruction and hunting for food, although the importance of these is not clear. According to some accounts these constitute important threats. Other accounts suggest that the species is adaptable and widespread enough, and occurs in enough protected areas, to be secure at present. A population size of 5000 has been suggested.

Additional threats for these species may include pollution, motor traffic, and collection for medicinal purposes although the significance of these threats is currently unknown.

*C. bakeri* and *C. melanosterna* are protected by Honduran law, although enforcement is apparently poor. *C. oedirhina* is not currently protected under national law but all three species are offered some protection through protected land and/or research and breeding programmes.

All three species have been classified by IUCN as Critically Endangered, on the basis of their small ranges, presumed limited and fragmented populations and ongoing threat from habitat loss. In at least one case (*C. bakeri*) the population estimate used in the Red List Assessment appears to be a considerable underestimate.

*Ctenosaura* species have featured in the exotic pet trade in Europe and North America. However, their popularity as pets has reportedly decreased in recent years and there appears to be little demand for or availability of these species in international trade, although some evidence was found to suggest that *C. melanosterna* is in circulation in the pet trade and is being successfully captive-bred. The US Fish & Wildlife Service's trade database (LEMIS) for 2000–2007 showed that 858 *Ctenosaura* had been exported from Honduras to the USA during this period, the majority recorded as wild-taken and 60% for

scientific purposes. The specimens were not identified to species level and therefore could be any of the five species (the three under discussion, plus *C. similis* and *C. flavidorsalis*) of *Ctenosaura* which occur in Honduras. In 2004 and 2008, 17 and 11 *C. melanosterna* respectively were imported to the USA (according to the SS) but it is not known if they were imported for commercial trade or other purposes. In 2008 a further 49 wild-taken *C. melanosterna* were imported to the USA for scientific purposes.

Although these three species are similar, they are reportedly easy to distinguish based on morphological characteristics as adults. However, hatchlings are thought to be more difficult to tell apart. *C. melanosterna* and *C. palearis* are said to be more similar in appearance and can be particularly difficult to distinguish, especially as hatchlings or young. A proposal to include *C. palearis* in Appendix II has also been submitted for consideration at this CoP (see proposal Prop. 12); therefore look-alike issues should also be considered.

**Analysis:** All three species of *Ctenosaura* have restricted ranges. One (*C. bakeri*) has a very small range but is evidently numerous within it; another (*C. oedirhina*) is reportedly adaptable and occurs within a wide range of habitats in its 13 000-ha range. Little information is available on the third (*C. melanosterna*), which has a disjunct and possibly very limited distribution. All are reportedly affected by habitat loss and degradation, and by hunting for food, although the severity of these threats in each case is not clear. Iguanas, including *Ctenosaura* species, feature in the exotic pet trade. However, international trade in these particular species appears to be very limited. Although unidentified *Ctenosaura* species have been exported from Honduras in recent years, there is no evidence to suggest that *C. bakeri* and *C. oedirhina* are in international trade at present. It would appear therefore that these species do not meet the criteria for inclusion in Appendix II in that regulation of international trade is not needed to ensure that they do not become eligible for inclusion in Appendix I in the near future, nor is it required to ensure that harvesting for trade is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.

There has been a small amount of reported trade in *C. melanosterna* in recent years. Available evidence suggests that there are adequate numbers of captive-bred specimens to supply the limited demand for this species in the pet trade but there are unconfirmed reports of limited export from Honduras. The species may have a small wild population and conceivably any harvest for export may reduce the population to a level at which its survival might become threatened. However there is no evidence to support this, and so it is not possible to state with confidence whether the species meets the criteria for inclusion in Appendix II set out in *Resolution Conf. 9.24 (Rev. CoP14)* or not.

Hatchlings or young specimens of these species may be difficult to distinguish from those of *C. palearis*, proposed by Guatemala for inclusion in Appendix II (proposal Prop. 12). In theory the look-alike criteria of Annex 2b of *Resolution Conf. 9.24 (Rev. CoP14)* could apply were that proposal to be accepted. However, as there is little evidence that these species are in trade, and they have a different country of origin, it is unlikely that their inclusion would be necessary to assist in regulation of trade in the former, particularly in view of the fact that all other *Ctenosaura* species would remain unlisted.

Supporting Statement (SS)	Additional information
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Taxonomy

Subgenus *Loganiosaura* *Ctenosaura*. The *Ctenosaura palearis* complex or clade includes: *C. bakeri*, *C. melanosterna*, *C. oedirhina* and *C. palearis* (included in a separate proposal).

Supporting Statement (SS)	Additional information
<p>Until 1987 <i>C. oedirhina</i> was considered to be the same species as <i>C. bakeri</i>.</p> <p>Until 1997 <i>C. melanosterna</i> was considered to be the same species as <i>C. palearis</i>.</p>	
<b><u>Range</u></b>	
<p><b><i>C. bakeri</i></b>: Honduras (Island of Utila)</p> <p><b><i>C. melanosterna</i></b>: Honduras (Aguán valley and the Cayos Cochinos Archipelago (also known as the Hog Cays))</p> <p><b><i>C. oedirhina</i></b>: Honduras (island of Roatán)</p>	
<b><u>IUCN Global Category</u></b>	
<p>All three species are listed as Critically Endangered by the <i>IUCN Red List of Threatened Species</i>.</p>	<p><b><i>C. bakeri</i></b>: Critically Endangered B1ab(iii)+2ab(iii) (Assessed 2004, Categories and Criteria ver. 3.1).</p> <p><b><i>C. melanosterna</i></b>: Critically Endangered B1ab(iii,v) (Assessed 2004, Categories and Criteria ver. 3.1).</p> <p><b><i>C. oedirhina</i></b>: Critically Endangered B1ab(iii) (Assessed 2004, Categories and Criteria ver. 3.1).</p>

### Biological and trade criteria for inclusion in Appendix II (Resolution Conf. 9.24 (Rev. CoP14) Annex 2 a)

#### A) Trade regulation needed to prevent future inclusion in Appendix I

The SS states that the "wild populations are greatly diminished and all have highly restricted geographical ranges".

***C. bakeri***: The supporting statement reports an estimated population size of 10 000 but states that there have been no detailed population studies to date. According to the proposal, experts consider this to be an overestimation and the proponent suggests 'a more realistic' population estimate is 3000.

*Wilson and McCranie (2003) conducted a study on the environmental stability of Honduras and categorized C. bakeri, C. oedirhina and C. melanosterna as of high vulnerability based on extent of geographic range, extent of ecological distribution and degree of human persecution.*

***C. bakeri***: *A recent study found that the habitat of C. bakeri consisted of three isolated mangrove regions on the island which covered a total area of 1091 ha (Gutsche, 2005), comprising 27% of Utila's land area. Nesting sites were restricted to 109 ha of sandy coastal territory.*

*A mark-and-recapture study found high population densities of 24, 39 and 103 individuals per ha, leading to an overall population estimate of 57 823 to 93 826. Just over 70% of animals captured in the study were adults, and observation indicated that juveniles were under-represented, indicating that the overall population was even*

Supporting Statement (SS)	Additional information
<p><b>C. melanosterna:</b> Endemic to Aguán valley and the Cayos Cochinos Archipelago (also known as the Hog Cays), Honduras. Can be found in the thorny scrub habitat of the Aguán valley. Estimated population size of 2000.</p>	<p><i>higher (Gutsche, 2005; Gutsche and Streich, 2009). These figures were similar to those reported by Kuttler (2000) and considerably higher than earlier estimates (e.g. Zoemer and Köhler, 2004) that were evidently based on more or less casual observation rather than detailed sampling. Earlier observations had also indicated a biased sex ratio while Gutsche and Streich (2009) report a sex ratio of males to females of 1:1.2.</i></p> <p><i>It is broadly acknowledged that habitat loss is the primary threat to C. bakeri. This is a result of tourist and housing developments, road construction, mangrove forest habitat being used as rubbish dumps and the establishment of exotic, invasive plants making areas unsuitable for egg laying (Zoerner and Köhler, 2004). Between 1999 and 2003, Gutsche and Streich (2009) observed the cutting of 25 ha of mangrove forest. In addition to this, much of the nesting grounds (the beaches) have been sold for tourist developments (Binns, 2003) and since the females only use a small number of coastal areas (amounting to approximately 109 ha), they are particularly vulnerable to loss of potential nest sites (Gutsche, 2006). If current development plans continue it may result in a 50% loss of current mangrove area and a loss of 80% of all nesting sites within the next 20 years, resulting in significant population declines (Gutsche and Streich, 2009).</i></p> <p><i>Traffic and pollution could also threaten the stability of C. bakeri populations (Pasachnik, 2006; Gutsche and Streich, 2009).</i></p> <p><i>A further threat to C. bakeri may be hybridization with the more abundant and widespread C. similis. It is predicted that further habitat destruction will increase contact between the two species and may result in increased potential for hybridization (Gutsche and Köhler, 2008).</i></p> <p><i>Gutsche and Streich (2009) observed an increased number of subsistence hunters in the field and local residents reported that they hunt up to 20 animals per hunt in the dry season. This may be a result of the temporary accommodation which has been established to accommodate migrant workers, working on the building developments (Binns, 2009).</i></p> <p><b>C. melanosterna:</b> According to Gaal (2009a), C. melanosterna is found on the mainland (Aguán valley) and on three of the Cayos Cochinos islands, including: Cayo Cochino Grande, Cayo Cochino Menor and Chachahuate.</p> <p><i>Their habitat is decreasing in quality and area (Köhler, 2004) and they are also thought to be used for food by local people both on the mainland and on Cayo Grande (Pasachnik, 2006).</i></p> <p><i>The species was classified as Critically Endangered by IUCN in 2004 on the basis of</i></p>

Supporting Statement (SS)	Additional information
<p><b>C. oedirhina:</b> Endemic to the island of Roatán in Honduras. They can be found in a variety of habitats, including rocky cliffs, beaches, mangroves and dry forests. Estimated population size of 5000.</p>	<p><i>its having an estimated area of occurrence and area of occupancy of less than 100 km<sup>2</sup>, a fragmented population of perhaps fewer than 2500 mature individuals and ongoing decline in area of habitat (Köhler, 2004b).</i></p> <p><i>There are unconfirmed reports of sporadic smuggling of the species from the Cayo Cochinos (where the species is apparently abundant in its extremely limited range) to San Pedro Sula for export (TRAFFIC North America, 2010).</i></p> <p><b>C. oedirhina:</b> <i>Pasachnik (2006) regarded Roatán island to be large enough (and have enough protected areas) to maintain the species which is adept at exploiting different habitat types. Roatán island covers 13 000 ha. Recent satellite imagery of the island indicates that much of it may contain suitable habitat for the iguana.</i></p> <p><i>The species was classified as Critically Endangered by IUCN in 2004 on the basis of its having an estimated area of occurrence and area of occupancy of less than 100 km<sup>2</sup>, a fragmented population of perhaps fewer than 2500 mature individuals and ongoing decline in area of habitat (Köhler, 2004b).</i></p> <p><i>Pasachnik (2010) regarded the species as threatened by habitat destruction and hunting.</i></p>

Supporting Statement (SS)	Additional information
<p data-bbox="309 245 2033 300"><b><u>B) Regulation of trade required to ensure that harvest from the wild is not reducing population to level where survival might be threatened by continued harvest or other influences</u></b></p> <p data-bbox="181 344 1048 424">The proposal specifies that these species are highly valued in the exotic pet trade, particularly in Europe and the USA, due to their medium to small size, relatively docile nature and their ease to maintain in captivity.</p> <p data-bbox="181 815 1055 895">Information from the US Fish &amp; Wildlife Service database (2009) shows that 17 (in 2004) and 11 (in 2007) <i>C. melanosterna</i> have been exported from Honduras to the USA.</p> <p data-bbox="181 1066 1077 1174">The proposal states that a survey detected there is regular trade of these three species, most of which is illegal. The summary table shows the species are available for sale in Spain, Germany, the Netherlands, and the USA from between USD90 and USD100.</p>	<p data-bbox="1140 344 2056 536"><i>Newman (2009) states that Ctenosaura are now quite uncommon in trade in the UK and Werning (2009) believes that there is not a high demand for these species and that they are difficult to keep in captivity. Gutsche (2009) states that according to keepers and dealers of Ctenosaura, these species are not popular in the pet trade due to their relatively large size, unsuitable temperaments and because they are not particularly attractive; whereas, smaller species, such as C. defensor and C. alfredschmidti are more popular in the pet trade.</i></p> <p data-bbox="1140 564 2051 756"><i>According to Werning (2009), the number of kept and traded animals of these species is seemingly very low and there does not appear to be any real demand for these species. Werning (2009) verifies that wild C. melanosterna has, in the past, been imported for the pet trade but, more recently, the minimal demand for this species is easily supplied by captive-bred specimens. A breeder of C. melanosterna reported that he finds it difficult to sell the 20–30 specimens he breeds per year due to lack of demand (Werning, 2009).</i></p> <p data-bbox="1140 785 2033 1034"><i>Data from the US Fish &amp; Wildlife Service’s trade reporting system (LEMIS) showed that 858 specimens of Ctenosaura has been exported from Honduras to the USA between 2000 and 2007, all but 17 of these were recorded as wild-taken and over 60% were for scientific purposes. However, these specimens were not identified to species level. Unfortunately, hard copies of the declarations and invoices would be needed to identify to species level, at the time of writing this information was unavailable to the IUCN/TRAFFIC Analysis Team. However, it was identified that 49 wild-taken C. melanosterna were imported to the USA from Honduras for scientific purposes in 2008.</i></p> <p data-bbox="1140 1062 2011 1117"><i>The SS did not provide details regarding the number and source of the specimens available for sale.</i></p> <p data-bbox="1140 1145 2033 1311"><i>A brief internet search for the purpose of this review indicated that these species are not abundant in the pet trade. Only C. melanosterna was found for sale, specified as captive-bred. Reijngoud (2009) also conducted a study on the availability of these species on the internet and found that C. bakeri and C. oedirhina were not available for sale, whilst C. melanosterna were available but only on a small scale and advertised as captive bred.</i></p> <p data-bbox="1140 1340 2022 1394"><b>C. bakeri:</b> <i>Binns (2009) stated that C. bakeri does not appear to be available in the USA.</i></p>

Supporting Statement (SS)	Additional information
	<p><b>C. melanosterna:</b> Gaal (2009b) suggested that <i>C. melanosterna</i> are not threatened by the international trade, partly because they are not easy to keep in captivity. Gaal (2009b) also found that the only <i>C. melanosterna</i> found for sale in pet shops were captive-bred. All other <i>Ctenosaura</i> found for sale were the more popular, smaller species including: <i>C. flavidorsalis</i>, <i>C. oaxacana</i> and <i>C. quinquecarinata</i>. Binn (2009) stated that whilst specimens are occasionally available in trade they are primarily imported into the USA in small numbers along with <i>C. palearis</i>. An online chat room forum, suggested <i>C. melanosterna</i> are bred in captivity in the USA but that they are not highly sought after due to their reputation as bad pets (Anon., 2009).</p> <p><b>C. oedirhina:</b> Werning (2009) reported that an adult <i>C. oedirhina</i> can be sold for between USD150–250 but is not in high demand.</p>

**Inclusion in Appendix II to improve control of other listed species**

**A) Specimens in trade resemble those of species listed in Appendix II under Resolution Conf. 9.24 (Rev. CoP14) Annex 2 a or listed in Appendix I**

*No Ctenosaura species are currently listed in Appendix II.*

*A proposal has been submitted to list *C. palearis* in Appendix II, which will be discussed at CoP15 (Prop. 12).*

*Hatchlings of Ctenosaura species are similar in appearance and therefore may be difficult to identify to the species level without knowledge of origin.*

**B) Compelling other reasons to ensure that effective control of trade in currently listed species is achieved**

These three *Ctenosaura* species can contribute to seed dispersal and therefore the regeneration of forests.

**Other information**

Supporting Statement (SS)	Additional information
<u>Threats</u>	
<p>They are subject to national use for food where the meat, eggs and skin may be consumed by local communities as a source of protein. <i>Ctenosaura</i> have also been used as aphrodisiacs (eggs and meat) and in some local communities, in traditional medicine (fat and meat) and more recently as laboratory animals and for exotic skins.</p>	<p><i>Wilson and Townsend (2006) state that the future of the Honduran herpetofauna is endangered due to deforestation as a result of unregulated human population growth. As all three species are primarily arboreal (Malfatti, undated; Gaal, 2009b), they are likely to be particularly vulnerable to deforestation and selective felling of trees.</i></p>
<u>Similar species</u>	
<p>The species within the subgenus <i>Loganosaura</i> are easily differentiated from other <i>Ctenosaura</i> species.</p> <p><b>C. melanosterna:</b> Until 1997 this species was considered to be the same species as <i>C. palearis</i>. However they differ in colouring, behaviour and osteological features.</p> <p><b>C. oedirhina:</b> Until 1987 this species was considered to be the same species as <i>C. bakeri</i>. However, molecular and morphological characteristics demonstrated that they should be considered as distinct species.</p>	<p><i>Gutsche and Köhler (2008) note that all three Ctenosaura species are easily distinguished by their morphological characteristics and their allopatric distribution despite their genetic similarities (only 1–2% difference). However, experts recognize (Pasachnik, 2009; Echternacht, 2009; Köhler, 2009) that look-alike issues may be problematic in identifying specimens of unknown origin, especially hatchlings.</i></p> <p><i>Ctenosaura flavidorsalis is present in Honduras.</i></p> <p><i>C. melanosterna and C. palearis can also be distinguished by their size and weight when grown (Gaal, 2009b).</i></p> <p><i>U.S. LEMIS data, from 2000-2007, showed that wild taken specimens of C. similis from Honduras are in trade (total: 8 025). However, C. similis are said to be easily identifiable due to their green colouration as a hatchling and their intercalary scale rows (Echternacht, 2009; Pasachnik, 2009).</i></p>
<u>Conservation, management and legislation</u>	
	<p><b>C. bakeri:</b> <i>Has been protected by Honduran law since 1994; this includes a ban on hunting. However, this has been sporadically and poorly enforced (Pasachnik, 2006). They are known to occur in Turtle Harbour Wildlife Refuge and The Utila Research and Breeding Station which was established in 1997 in order to promote conservation ethic and to establish a breeding programme (Binns, 2003).</i></p> <p><i>The Bay Island Conservation Agency (BICA) and the Conservation Project Utila Iguana (CPU) are also promoting conservation of C. bakeri, one major project is focusing on establishing a 'mangrove sanctuary' to protect C. bakeri habitat (Binns, 2003).</i></p>



Supporting Statement (SS)	Additional information
	<p><b>C. melanosterna:</b> <i>Is protected by Honduran law, which includes a ban on hunting. Additionally the Cayos Cochinos Archipelago is protected by the Honduran Coral Reef Foundation (HCRF) which has set up a research centre in Cayo Pequeno. This has halted hunting and habitat destruction and allowed "C. melanosterna to thrive" (Pasachnik, 2006). There is also a protected area in the Aguán valley (Pasachnik, 2006) and a research and breeding centre on the mainland has also been proposed (Gaal, 2008).</i></p> <p><b>C. oedirhina:</b> <i>Is not currently under any legal protection, although according to Pasachnik (2006), the island is large enough and has enough protected areas to conserve this species which is adept at exploiting different habitat types. Some protection is offered to specimens on private land (e.g. Paya Bay on Roatán) and specimens which occur in the red Mangrove Canal are relatively well protected as C. oedirhina is regarded as a tourist attraction (Pasachnik, 2006).</i></p>
	<p><b><u>Captive breeding/artificial propagation</u></b></p> <p><b>C. bakeri:</b> <i>A breeding program exists at the The Utila Research and Breeding Station where over 750 hatchlings have been produced (Castillo, 2009).</i></p> <p><i>In 1994 several specimens were imported to Germany for a captive breeding programme (Köhler and Rittmann, 1998) and there are now a number of specimens in European zoos being successfully captive bred, including at London Zoo. Plans include breeding programmes at zoos in Spain, Poland and California (Eccleston, 2007). There are also two zoos in the USA which hold collections of C. bakeri (<a href="http://www.fortworthzoo.com/conserves/utilaiguana.html">http://www.fortworthzoo.com/conserves/utilaiguana.html</a>).</i></p> <p><b>C. melanosterna:</b> <i>A Studbook was established for C. melanosterna in 2007 which includes 30 specimens. There are six known locations keeping C. melanosterna, three in the Netherlands and three in the USA (Gaal and Henningheim, 2008). A zoo in Helsinki and Vienna also hold collections of C. melanosterna (Gaal, 2009b).</i></p> <p><b>C. oedirhina:</b> <i>A captive population exists in Rotterdam Zoo and there are some specimens kept by private reptile keepers in Germany, the Netherlands (Köhler, 2004) and the USA (Gaal, 2009b). A captive breeding programme in Germany began in 1994 (Köhler and Rittmann, 1998), information on the success of the programme could not be found. The European Studbook Foundation also keeps a studbook for C. oedirhina, with two known locations: Netherlands and the USA.</i></p>
	<p><b><u>Other comments</u></b></p> <p><b>C. bakeri:</b> <i>The mangroves are usually state-owned and therefore could be easily protected, whilst the beaches are often privately owned and may be harder to protect.</i></p>

Supporting Statement (SS)	Additional information
	<p>Gaal (2009) acknowledges that illegal trade for <i>C. melanosterna</i> is not the primary threat for this species; rather the primary problems for this species are loss of habitat and local consumption.</p>

**Reviewers:**

R. Gaal, A. Gutsche, TRAFFIC North America, H. Werning.

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