DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R9–ES–2010–0030; 92210–1113–0000–C6]

RIN 1018–AV22

Endangered and Threatened Wildlife and Plants; Final Rule To Remove the Morelet's Crocodile From the Federal List of Endangered and Threatened Wildlife

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: Under the authority of the Endangered Species Act of 1973, as amended (Act), we, the U.S. Fish and Wildlife Service (Service), are removing the Morelet's crocodile (*Crocodylus moreletii*) throughout its range from the Federal List of Endangered and Threatened Wildlife due to recovery. This action is based on a thorough review of the best available scientific and commercial data, which indicate that the species' status has improved to the point that the Morelet's crocodile is not likely to become threatened within the foreseeable future throughout all or a significant portion of its range. After the effective date of this final rule, the Morelet's crocodile will remain protected under the provisions of the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

DATES: This rule becomes effective June 22, 2012.

ADDRESSES: This final rule is available on the Internet at *http://www.regulations.gov* and comments and materials received, as well as supporting documentation used in the preparation of this rule, will be available for public inspection, by appointment, during normal business hours at: U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, Suite 400, Arlington, VA 22203.

FOR FURTHER INFORMATION CONTACT: Janine Van Norman, Chief, Branch of Foreign Species, Endangered Species Program, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, Room 420, Arlington, VA 22203; telephone 703–358–2171; facsimile 703–358–1735. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

(1) Purpose of the Regulatory Action

We are delisting the Morelet's crocodile throughout its range due to recovery under the Endangered Species Act (16 U.S.C. 1531 et seq.) Conservation actions by the three range countries of Mexico, Belize, and Guatemala have eliminated or significantly reduced the threats to the species to point that it is no longer endangered or threatened. Wild populations have increased substantially since restrictions on commercial harvest and trade were instituted in the 1970s. Species experts now widely characterize Morelet's crocodile populations as healthy.

(2) Major Provision of the Regulatory Action

This action is authorized by the Endangered Species Act of 1973 (Act), as amended.

We are amending § 17.11(h), subchapter B of chapter I, title 50 of the Code of Federal Regulations by removing the entry for ''Crocodile, Morelet's'' from the List of Endangered and Threatened Wildlife.

(3) Costs and Benefits

This is a delisting action, and the Office of Management and Budget (OMB) has designated it as not significant. Therefore, we have not analyzed the costs or benefits of this rulemaking action.

Previous Federal Actions

The Morelet's crocodile was listed as endangered throughout its entire range under the predecessor of the Act via a rule published in the **Federal Register** on June 2, 1970 (35 FR 8491). Import into, export from, or re-export from the United States, as well as other prohibitions, including movement in the course of a commercial activity and sale in interstate or foreign commerce, of endangered species and their parts and products, are prohibited under the Act unless otherwise authorized. Authorizations for endangered species can only be made for scientific purposes or to enhance the propagation or survival of the species. On July 1, 1975, the Morelet's crocodile was listed in Appendix I of CITES. These protections were put in place because the species had suffered substantial population declines throughout its range due to habitat destruction and overexploitation through the commercial crocodilian skin trade. CITES Appendix I includes species that are ''threatened with extinction which are or may be affected by trade.''

On May 26, 2005, the Service received a petition from the Government of Mexico's Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO) to remove the Morelet's crocodile from the List of Endangered and Threatened Wildlife at 50 CFR 17.11.

Based on the information provided, the Service's 90-day finding on the petition, which was published in the **Federal Register** on June 28, 2006 (71 FR 36743), stated that the petition provided substantial information to indicate that the requested action may be warranted. In that finding, we announced that we had initiated a status review of the species as required under section 4(b)(3)(A) of the Act, and that we were seeking comments on the petition, as well as information on the status of the species, particularly in Belize and Guatemala. The Service also solicited comments or additional information from counterparts in Mexico, Belize and Guatemala.

On April 27, 2011, the Service published in the **Federal Register** a rule proposing to delist the Morelet's crocodile from the Federal List of Endangered and Threatened Wildlife (76 FR 23650). With publication of the proposed rule, we implemented the Service's peer review process and opened a 60-day comment period to solicit scientific and commercial information on the species from all interested parties. For more detailed information on previous Federal actions, please refer to the April 2011 proposed rule.

We based this action on a review of the best scientific and commercial information available, including all information received during the public comment period. In the April 27, 2011, proposed rule, we requested that all interested parties submit information that might contribute to development of a final rule. We also contacted appropriate scientific experts and organizations and invited them to comment on the proposed delisting. We received comments from five individuals; two of those comments were from peer reviewers.

Summary of Comments and Recommendations

We reviewed all comments we received from the public and peer reviewers for substantive issues and new information regarding the proposed delisting of this species, and we address those comments below. Overall, the commenters and peer reviewers supported the proposed delisting. Belize and Guatemala did not submit comments.

Peer Review

In accordance with our policy published on July 1, 1994 (59 FR 34270), we solicited expert opinions from six individuals with scientific expertise that included familiarity with the species, the geographic region in which the species occurs, and conservation biology principles. We received responses from two of the peer reviewers from whom we requested comments. They generally agreed that the description of the biology and habitat for the species was accurate and based on all relevant literature. Some new information was provided, as well as technical clarifications, as described below. Technical corrections suggested by the peer reviewers have been incorporated into this final rule. In some cases, it has been indicated in the citations by ''personal communication'' (pers. comm.), which could indicate either an email or telephone conversation; in other cases, the research citation is provided. *Public Comments*

The Service only received substantive comments from peer reviewers. There were no substantive comments from the public.

Peer Reviewer Comments

(1) Comment: One peer reviewer disagreed with our statement that ''Unlike most other species of crocodilians, the Morelet's crocodile lacks bony plates beneath the skin (osteoderms) * * *'' The reviewer stated that 14 of 23 extant crocodilian species share that same characteristic. He suggested we change the language to ''Like many crocodilians * * *''

Our Response: The Service agrees, and we have revised the statement to incorporate this change.

(2) Comment: One peer reviewer suggested that caution be made when discussing threats; we should not assume that mortality factors affecting some crocodiles constitute a threat that affects population recruitment or population growth trajectory. He noted that crocodilians have a robust life-history strategy, including repeated production of offspring at intervals throughout their life cycle; long reproductive lives; high fecundity; and low egg and hatchling survival, likely enhanced by crocodilian parental care demonstrated for most species, including *Crocodylus moreletii.* The combined result is that crocodilians can sustain relatively high levels of mortality at all life stages without reducing recruitment or population growth. Thus the persistence of some anthropogenic threats at low levels such as killing, subsistence hunting, and fishing net entanglement are unlikely to constitute significant impacts to population persistence or even to recovery.

Our Response: We agree, and have included revised language in this rule.

(3) Comment: One peer reviewer stated that although the finding refers to a ''rule,'' there were very few rules governing this species, unlike other crocodilian species such as the saltwater crocodile, some caimans, and Nile crocodile, in which there are requirements governing trade, use, marking, etc.

Our Response: Those particular crocodilians were reclassified to ''Threatened'' status under the Act with a special rule under section 4(d) of the Act, governing crocodilians (see 50 CFR 17.42(c)). The Service notes that the Morelet's crocodile is being delisted, and will no longer fall under the provisions of the Act, and therefore will have no further requirements under the Act. However, this species will be subject to the requirements of 50 CFR part 23 regulations, concerning the Convention on International Trade in Endangered Species of Wild Fauna and Flora, (CITES), and 50 CFR part 13 (General Permit Procedures) and 50 CFR part 14 (Importation, Exportation, and Transportation of Wildlife). We have included this statement in this final rule.

(4) Comment: One reviewer stated that they were not aware of any information on trade, biology, or populations in Guatemala. However, they spoke to Dr. Frank Mazzotti regarding his work referenced in the proposed rule (76 FR 23682) pertaining to a national crocodile management program with the Belize Forestry Department and Lamanai Field Research Center. The reviewer reports with Dr. Mazzotti's consent that this effort has resulted in little progress being made. As of June 20, 2011, Dr. Mazzotti was in Belize trying to reactivate the program.

Our Response: We have updated the section pertaining to Dr. Mazzotti's efforts in trying to reactivate this effort.

(5) Comment: One peer reviewer asserted our statement pertaining to the Morelet's crocodile's size attained at sexual maturity was incorrect: ''Morelet's crocodiles attain sexual maturity at about 4.9 ft. (1.5 m) in length, at approximately 7–8 years of age.'' The reviewer asserted that this only pertains to females (see Platt et al. 2008). Males attain sexual maturity at larger sizes than females, although this size may vary by habitat, nutrition, etc.

Our Response: We revised that section to reflect this correction.

(6) Comment: One peer reviewer asserted our statement pertaining to ''Nests, usually constructed of leaf mounds * * *'' was incomplete. They stated that Morelet's crocodile nests are constructed of various types and components of vegetation such as grasses and sedges, leaves and soil, as well as other materials, such as woody debris.

Our Response: We revised that section to include the other nesting materials highlighted by the peer reviewer.

(7) Comment: One peer reviewer noted that the proposed rule had a number of repetitious sections where the same information was presented almost word for word (e.g. the sections describing Mexico's 2010 CITES proposal.)

Our Response: We agree, and have limited the CITES 2010 discussion to Factor D., Inadequacy of Existing Regulatory Mechanisms, *Mexico's Proposal To Transfer the Morelet's Crocodile to CITES Appendix II.* We refer back to this discussion in Factor D as needed.

(8) One of the peer reviewers expressed concern about effective enforcement, after delisting. He stated that, due to financial constraints, limited personnel, and other factors, ''effective enforcement of wildlife laws and regulations can be difficult to impossible to achieve in the range countries.

Our Response: The principle threat to Morelet's crocodiles was trade for the crocodilian skin trade. Illegal harvest or killing of individuals perceived as threats to humans or livestock cannot be completely precluded, but enforcement of controls on domestic and international trade severely limit any commercial incentives. In this rule we state that even with this delisting of the species under the Endangered Species Act, ''the status of the species under CITES, which is an international trade agreement (see Factor D., Inadequacy of Existing Regulatory Mechanisms, *Mexico's Proposal To Transfer the Morelet's Crocodile to CITES Appendix II*), will continue to preclude the trade of wild specimens for commercial purposes and therefore should not create additional pressure on wild populations in any of the range states, as long as enforcement remains effective.'' The Service feels that enforcement under CITES is effective at curtailing illegal trade of Morelet's crocodile, and there is no indication that it will change in the immediate future.

Summary of Changes From Proposed Rule

We fully considered the comments we received from the public on the proposed rule when developing this final delisting of the Morelet's crocodile. This final rule incorporates changes to our proposed delisting based on the comments that we received (discussed above) and newly available scientific and commercial information. Reviewers generally commented that the proposed rule was very thorough and comprehensive. We made some technical corrections based on new, although limited, information presented by the peer reviewers. None of the information, however, changed our determination that delisting this species is warranted.

Species Information

Three species of crocodilians occur in Mexico and Central America. The Morelet's crocodile and the American crocodile (*Crocodylus acutus*) co-occur in Mexico, Belize, and Guatemala (Schmidt 1924, pp. 79 and 85; Stuart 1948, p. 45). While their ranges overlap, the American crocodile has a much larger range than the Morelet's crocodile, and is found in the United States in the State of Florida, as well as in the Caribbean, on Pacific and Atlantic coasts of Central America and in northern South America, in Venezuela, Colombia, Ecuador, and northern Peru. A third species, the common or spectacled caiman (*Caiman crocodilus*) occurs in Mexico and Guatemala, but is absent from Belize. The distribution of the common caiman also extends into northern South America (Ross 1998, pp. 14–17; Thorbjarnarson 1992, pp. 82–85). The Morelet's crocodile was named after a French naturalist, P.M.A. Morelet (1809–1892), who discovered this species in Mexico, in 1850 (Britton 2008, p. 1). The type locality of the species was later restricted to ''Guatemala, El Peten, Laguna de Peten'' when the species was scientifically described. In Mexico, the Morelet's crocodile is known as ''lagarto'' or ''swamp crocodile'' (Rodriguez-Quivedo et al. 2008).

The Morelet's crocodile is a ''relatively small species'' that usually attains a maximum length of approximately 9.8–11.5 ft. (3–3.5 m (Sánchez 2005, p. 4); Britton 2008, p. 1)), with most wild adults ranging in length 6.6–8.2 ft. (2–2.5 m). Hurley (2005, p. 2), however, reported specimens attaining 15.4 ft. (4.7 m). Platt and Rainwater (2005, p. 25) stated that size estimates where shorter lengths were documented were probably based on populations that had been heavily impacted by hunting, and which now contained few large adults. The Morelet's crocodile is distinguished from other crocodiles, particularly the partially sympatric (having the same or overlapping distribution) and somewhat larger American crocodile, by the number of dorsal scales in each transverse row on its back, the number and arrangement of nuchal scales (located at the nape of the neck), and irregular scales on the ventrolateral (lower side) surface of the tail (Meerman 1994, p. 110; Navarro Serment 2004, pp. 55–56; Platt and Rainwater 2005, p. 27; Hernández Hurtado *et al.* 2006, p. 376; Platt *et al.* 2008b, p. 294). The Morelet's crocodile has six nuchal scales of similar size compared to other crocodile species, which have either four nuchal scales or four large nuchal scales and two small ones (CITES 2010a, p. 11). Like many crocodilians, the Morelet's crocodile lacks bony plates beneath the skin (osteoderms), making their skin more valuable as leather (Hurley 2005, p. 9). Adults have a yellowish-olive black skin, usually showing big black spots at the tail and at the back area, which in some adults can be entirely black. The ventral (underside) area is light in color, with a creamy yellowish tone. A thick and soft skin has made the Morelet's crocodile desirable for commercialization (CITES 2010a, p. 3).

Opportunistic carnivores, juvenile Morelet's crocodiles feed on small invertebrates, especially insects and arachnids, while subadults eat a more diverse diet including mollusks, crustaceans, fish, amphibians, and small reptiles. Adult crocodiles consume reptiles, birds, and mammals (Platt *et al.* 2002, p. 82; Sánchez 2005, p. 7; Platt *et al.* 2006, pp. 283–285; CITES 2008, p. 9, CITES 2010a, p. 3). This species is also known to exhibit necrophagy (consumption of dead animal carcasses over an extended period (several days)) and interspecific kleptoparasitism (stealing of food from one individual by another individual) (Platt *et al.* 2007, p. 310). Female Morelet's crocodiles attain sexual maturity at about 4.9 ft. (1.5 m) in length, at approximately 7–8 years of age. Males attain sexual maturity at larger sizes than females, although this size may vary by habitat, nutrition, and other environmental factors (Rainwater 2011, pers. comm.)

A growth rate of 0.63 inches (in) per month (1.6 centimeters (cm) per month) was observed in Morelet's crocodiles during the first 3 years of life under protected conditions in Mexico, while a rate of 0.94–1.18 in per month (2.4–3.0 cm per month) was achieved under farming conditions (Pérez-Higareda *et al.* 1995, p. 173). Adult females build nests and lay 20–40 eggs per clutch (Hurley 2005, p. 3; Sánchez 2005, p. 6), with an average of 35 eggs per clutch (CITES 2008, p. 9; CITES 2010a, p. 3). Nests consist of mounds composed of grasses, sedges, leaves, soil and woody material (Rainwater 2011, pers. comm.), and are generally constructed at the beginning of the wet season (April–June). They are located on the shores of freshwater wetlands, as well as in coastal lagoons and mangrove patches (Platt *et al.* 2008a, pp. 179–182).

An analysis based on DNA microsatellite data from hatchlings collected at 10 Morelet's crocodile nests in Belize showed that progeny from 5 of the 10 nests were sired by at least two males (McVay *et al.* 2008, p. 643). These data suggested that multiple paternities was a mating strategy for the Morelet's crocodile and was not an isolated event. In addition, this information may be useful in the application of conservation and management techniques for the species.

The eggs of Morelet's crocodiles hatch in September–October, 65–90 days after they are laid. Females attend the nest during incubation, and can assist the newborns to leave the nest. Both parents protect juveniles against predators and other adult crocodiles (CITES 2010a, p. 3). Nest failures due to flooding and predation, both avian and mammalian, are common (Platt *et al.* 2008a, p. 184). Expected lifespan in the wild is 50–65 years (Hurley 2005, p. 4.) The Morelet's crocodile exhibits and shares with other crocodilians many acoustic and visual signals that convey reproductive, territorial, and other types of information (Senter 2008, p. 354).

The Morelet's crocodile occurs primarily in freshwater environments such as lakes, swamps, and slow-moving rivers, but can temporarily inhabit intermittent freshwater bodies, such as flooded savannahs, and is occasionally observed in brackish coastal lagoons (Villegas 2006, p. 8). Floating and emergent vegetation provide cover to protect young crocodiles from predators, including cannibalism by adult crocodiles (Sánchez 2005, p. 7). In contrast to the Morelet's crocodile, the American crocodile feeds mainly on fish and occurs primarily in coastal or brackish environments, such as coastal mangrove swamps, brackish and saltwater bays, lagoons, marshes, tidal rivers, and brackish creeks. American crocodiles can also be found in abandoned coastal canals and borrow pits, and may range inland into freshwater environments preferred by the Morelet's crocodile, such as lakes and lower reaches of large

rivers. American and Morelet's crocodiles have been known to lay eggs within the same nest mound as conspecifics, suggesting a more gregarious and tolerant demeanor (Brien *et al.* 2007, pp. 17–18).

The historical distribution of the Morelet's crocodile comprised the eastern coastal plain of Mexico, most of the Yucatan Peninsula, Belize, and northern Guatemala (Hurley 2005, p. 1), with an estimated historical distribution covering 173,746 mi^2 (450,000 km^2) (Sigler and Domínguez Laso 2008, pp. 11–12). Approximately 51 percent of the original geographic distribution in Mexico remains undisturbed, while approximately 49 percent is disturbed or altered (Mexico 2006, p. 17, CITES 2010a, p. 16). In linear terms, the amount of undisturbed shoreline habitat available in Mexico to the Morelet's crocodile is about 15,534 mi (25,000 km) of shoreline, which is approximately 72 percent of the total undisturbed shoreline habitat available throughout the species' range. According to CONABIO, the amount of undisturbed shoreline habitat available to the Morelet's crocodile in Belize and Guatemala is estimated to be 2,050 mi (3,300 km) and 4,163 mi (6,700 km), respectively, or 9 and 19 percent of the total undisturbed shoreline habitat available throughout the species' range (CONABIO 2005, pp. 16–19).

Historical estimates of total population sizes in the three range countries are unavailable or imprecise, and we were not able to find any additional data on historical, rangewide population estimates for the species. While not quantifiable or documented by field surveys, Lee (1996, p. 134) characterized the historical distribution and abundance of the Morelet's crocodile in the Yucatan Peninsula of Mexico as follows: ''Throughout its range, nearly every local aguada (flood) has (or had) its lagarto, which generally proves to be *C. moreletii.''* The same probably could be said about Belize and Guatemala.

It has been widely reported, however, that by the middle of the 20th century, populations of Morelet's crocodiles were widely depleted due primarily to overharvest for commercial purposes during the 1940s and1950s. In ''Crocodiles: An action plan for their conservation,'' Thorbjarnarson (1992, p. 68 and the references cited therein) characterized the Mexican populations of Morelet's crocodiles in the early 1990s as very depleted in the Mexican States of Tamaulipas and Veracruz, recovering to some degree and viable in northeastern Mexico, and severely threatened in Tabasco State and Campeche State. However, populations of Morelet's crocodiles were not depleted in southern Chiapas State and eastern Quintana Roo State (Sian Ka'an Biosphere Reserve).

Few historical estimates for the Morelet's crocodile in Belize are available, but based on surveys during 1978 and 1979, Abercrombie *et al.* (1980, p. 103) reported that very few adults were observed in areas where they had previously been relatively abundant. This condition was attributed to overexploitation (i.e., commercial trade in hides). Thorbjarnarson (1992, p. 55) characterized the Morelet's crocodile populations in the early 1990s as generally depleted in the northern part of Belize, but relatively abundant in several other areas. Abercrombie *et al.* estimated the total population of Morelet's crocodiles older than 9 months of age in Belize at 2,200–2,500 individuals (Abercrombie *et al.* 1982, p. 16). Nothing was known in the scientific literature at that time about populations in the southern part of Belize. The only available countrywide estimates for the Morelet's crocodile in Belize suggested a total population size of 25,000–30,000 individuals that was declining in number in 1945, was near depletion between 1970 and 1980, and, in response to several protective measures, had undergone a slow recovery by 2000 to about 20,000 individuals (Finger *et al.* 2002, p. 199).

Thorbjarnarson (1992, p. 64) characterized the Guatemalan populations in the early 1990s as depleted, but capable of recovery. He indicated that 75 individuals had been reported at three lakes in the Petén Region, in the northern portion of the country, and that Morelet's crocodiles were known to be common in other parts of that region.

By the late 1990s, little had changed with regard to our knowledge of the distribution and abundance of the Morelet's crocodile. In ''Crocodiles: Status survey and conservation action plan (second edition),'' Ross (1998, pp. 46–47) characterized several populations of Morelet's crocodiles in all three countries as depleted. In some areas, however, including the Lacandón Forest (Chiapas State, Mexico) and the Sian Ka'an Biosphere Reserve (Quintana Roo State, Mexico), healthy populations of the Morelet's crocodile existed. These findings were based on anecdotal reports and incidental records; numerical data were not readily available.

Based on extrapolations of habitat relationships (e.g., vegetation type, size of wetland/riverine feature, and disturbance factors, described in more detail in CONABIO 2005, pp. 16–19) and frequency of encounter rates (derived from country-specific field research), the potential global population of free-ranging Morelet's crocodiles in 2004 was estimated to be 102,432 individuals (all age classes; 79,718 individuals in Mexico, 8,803 in Belize, and 13,911 in Guatemala), including approximately 19,400 adults (CONABIO 2005, pp. 17–19).

Summary of Factors Affecting the Species

Section 4 of the Act and its implementing regulations, 50 CFR 424, set forth the procedures for listing, reclassifying, or removing species from the Federal Lists of Endangered and Threatened Wildlife and Plants. ''Species'' is defined by the Act as including any species or subspecies of fish or wildlife or plants, and any distinct vertebrate population segment of fish or wildlife that interbreeds when mature (16 U.S.C. 1532(16)). Once the ''species'' is determined, we then evaluate whether that species may be endangered or threatened because of one or more of the five factors described in section 4(a)(1) of the Act. We must consider these same five factors in reclassifying or delisting a species. For species that are already listed as endangered or threatened, the analysis of threats must include an evaluation of both the threats currently facing the species, and the threats that are reasonably likely to affect the species in the foreseeable future following the delisting or downlisting and the removal or reduction of the Act's protections. We may delist a species according to 50 CFR 424.11(d) if the best available scientific and commercial data indicate that the species is neither endangered nor threatened for the following reasons: (1) The species is extinct; (2) the species has recovered and is no longer endangered or threatened; and/or (3) the original scientific data used at the time the species was classified were in error.

Factor A. Present or Threatened Destruction, Modification, or Curtailment of the Species' Habitat or Range

The overharvest for commercial purposes, rather than habitat destruction or modification, was the primary reason for the Morelet's crocodile being listed under the Act and its inclusion in CITES. However, the Act requires an analysis of current and future potential impacts to the species based on modification or destruction of habitat.

The petition (CONABIO 2005) highlights habitat degradation as a potential threat, especially if it involves lack of prey and eventual contamination of water bodies. Currently, the extent of habitat degradation is estimated to be moderate in Mexico and Belize, and slightly higher in northern Petén, Guatemala (CONABIO 2005, Annex 1, p. 10). However, as stated previously, historical estimates of rangewide habitat destruction for the Morelet's crocodile are unavailable or imprecise. We found that the data on habitat destruction were primarily presented separately for each individual country. Therefore, the following analysis of the potential threats to the species from habitat destruction or modification first presents the specific information available for the Morelet's crocodile in each country, and then presents the general information that was available for the species as a whole.

Mexico

The Morelet's crocodile is known historically from 10 states in Mexico (from east to west): Quintana Roo, Yucatán, Campeche, Chiapas, Tabasco, Veracruz, Oaxaca, Hidalgo, San Luis Potosí, and Tamaulipas (Águilar 2005, p. 2). Based on available information and interviews during a 1995 site visit to Mexico by the IUCN Crocodile Specialist Group, Ross (1998, pp. 13) suggested ''with some confidence'' that the Morelet's crocodile was widely distributed throughout most of its original range. These states were resurveyed between 2000 and 2004 to assess current Morelet's crocodile populations in those areas.

Surveys conducted between 2000 and 2004 documented the widespread distribution and relative abundance of wild populations of the Morelet's crocodile in Mexico (Domínguez-Laso *et al.* 2005, pp. 21–30; also summarized in Sánchez Herrera 2000, pp. 17–19; CONABIO 2005, pp. 11–13 and Annex 5; Sánchez Herrera and Álvarez-Romero 2008, p. 415; García *et al.* 2007, pp. 31–32; Sigler and Domínguez Laso 2008, pp. 11–13). Surveys found Morelet's crocodiles at 63 sites across all 10 Mexican states comprising the species' entire historic range in Mexico (CONABIO 2005, p. 12). Habitat evaluations based on five environmental components rated habitat quality as excellent at 10 sites (24 percent), or as favorable or suitable at 24 sites (57 percent). Furthermore, evidence of the presence of the Morelet's crocodile was found in cultivated areas and at sites with ''intermediate'' quality habitats (CONABIO 2005, p. 13). This suggested that the Morelet's crocodile does not require undisturbed habitat in order to occupy a site. Habitat mapping resulted in an estimated minimum of 15,675 mi (25,227 km) of shoreline as suitable Morelet's crocodile habitat in Mexico, which is 72 percent of the estimated suitable shoreline habitat available throughout the species' range (CONABIO 2005, pp. 14–16).

Population characteristics of the Morelet's crocodiles in Mexico were also determined during the 2000–2004 field surveys. All age classes were well represented (34 percent juveniles, 47 percent subadults, and 19 percent adults), indicating good recruitment (Domínguez-Laso *et al.* 2005, p. 31). A higher proportion of males to females (1.55 to 1 overall versus about 1 male per female) were observed in all age classes, except older subadults (Domínguez-Laso *et al.* 2005, pp. 33–34). Mean frequency of encounter, based on 62 localities surveyed—excluding one outlier site with an atypically large crocodile population—was 5.76 individuals per 0.62 mi (= 1 kilometer (km) of shoreline ((mode = 3.16 individuals per km); Domínguez-Laso *et al.* 2005, pp. 30, 40). These frequency of encounter rates were similar to those reported for other sites, for example: (1) Sigler *et al.* (2002, p. 222) reported rates of 8.33–18.5 individuals per km) at various sites throughout Mexico and commented that these were the highest rates ever reported for that country; (2) Cedeño-Vázquez (2002, p. 353) reported rates of 1–2 individuals per km), when present (22 of 40 surveys; 711 individuals counted; all age classes represented; hatchlings in September), at Bahia de Chetumal and Río Hondo, Mexico (n = 17 sites) and commented on the recovery of the species; (3) Cedeño-Vázquez *et al.* (2006, p. 15) reported rates of 7.6 and 5.3 individuals per km at La Arrigueña, Campeche State, and commented that this suggested a healthy population. A population estimate—based on (a) extrapolations of 3.16 individuals per km, (b) 19 percent adults, and (c) a cautious estimate of occupied habitat (15,675 mi (25,227 km) of river habitat)—produced a result of approximately 79,718 wild individuals (all ages) in Mexico comprising 78 percent of the total wild population, including approximately 15,146 adults in Mexico (Domínguez-Laso 2005, p. 40).

New information now available to the Service documents updates in the geographic distribution of the Morelet's crocodile in Mexico. Because of several unauthorized introductions or escapes from captive-breeding facilities in areas outside of the reported range of the species, the Morelet's crocodile has become established in the wild at three sites: Chacahua, Oaxaca State; Villa Flores, Chiapas State; and Laguna de Alcuzahue, Colima State (Álvarez Romero *et al.* 2008, p. 415). Several captive-breeding facilities along the Pacific coast in western Mexico contain Morelet's crocodiles. These facilities are located in areas outside of the reported range of the species, but potentially within appropriate habitat for this species. Concerns have been raised about these introductions and the potential negative impacts of this ''exotic'' or ''invasive'' species on the local biota (Álvarez Romero *et al.* 2008, pp. 415, 417). Although genetic evidence suggests that hybridization with the American crocodile is a long-standing, natural situation (Ross, 2011 pers. comm.), Mexico is making efforts to diagnose potential threats to the native American crocodile caused by hybridization with the introduced Morelet's crocodile on the Pacific coast of Mexico. The goal of these efforts is to generate morphological and molecular identification materials and study the population dynamics of the American crocodile. It will include monitoring and harvest of Morelet's crocodiles and hybrids for scientific research (CITES 2010a, p. 6).

According to the information presented in CONABIO 2005, the Morelet's crocodile in Mexico occupies at least 12 protected areas (CONABIO 2005, p. 30 and Annex 6). Part of the Sistema Nacional de Áreas Naturales Protegidas (SINANP or National System of Protected Natural Areas, described more fully in the Factor D section, Inadequacy of Existing Regulatory Mechanisms), encompasses 13 percent of the species' range and includes the following areas: Los Tuxtlas Biosphere Reserve, Pantanos de Centla Biosphere Reserve, Laguna de Términos Biosphere Reserve, Hampolol Wildlife Conservation and Research Center, El Palmar State Preserve, Ría Lagartos Biosphere Reserve, Yum Balam Biosphere Reserve, Laguna Nichupte, Sian Ka'an Biosphere Reserve, Bahia Chetumal (Bay), and Río Hondo (River).

The Government of Mexico's 2010 CITES proposal to transfer the Morelet's crocodile from CITES Appendix I to CITES Appendix II provided updated information on the number of protected areas for the Morelet's crocodile in Mexico. About 77 Federal and certified protected areas in Mexico provide shelter and legal protection to the Morelet's crocodile in its potential range. Of these, 11 have records of the species covering 7,763,147 acres (3,141,634 hectares (ha)) (CITES 2010a, pp. 11, 17–20). The Government of

Mexico designated 8 of the 11 protected areas containing Morelet's crocodiles as Biosphere Reserves, and the 3 remaining protected areas containing Morelet's crocodiles as Flora and Fauna Protection Areas. As stated above, these protected areas are part of SINANP (described more fully in the Factor D section, Inadequacy of Existing Regulatory Mechanisms).

The Government of Mexico's 2010 CITES proposal used both a narrative description (CITES 2010a, p. 11) and a list (CITES 2010a, pp. 17–20) to indicate that there are 11 federally protected areas in Mexico containing Morelet's crocodile. CONABIO 2005 used a narrative description (CONABIO 2005, p. 30) to indicate that there are at least 12 federally protected areas in Mexico containing Morelet's crocodile (CONABIO 2005, p. 30), but did not include a list of the federally protected areas. Based on the information available to the Service, we were unable to find any additional data to explain the difference in the numbers of federally protected areas cited in these two documents. The Government of Mexico's 2010 CITES proposal is the more recent document, and we consider it to contain the best available scientific and commercial data on the number of federally protected areas in Mexico.

The Convention on Wetlands of International Importance especially as Waterfowl Habitat (also known as the Ramsar Convention) is an intergovernmental treaty that provides a framework for international cooperation for the conservation of wetland habitats. CONABIO 2005 did not provide information on whether the Ramsar Convention protects any Morelet's crocodile habitat in Mexico. However, this information was included in the Government of Mexico's 2010 CITES proposal. According to their 2010 CITES proposal, there are 41 Ramsar sites in the potential range of the Morelet's crocodile in Mexico, 13 of which have records of the species covering 6,779,875 ac (2,743,718 ha) (CITES 2010a, pp. 11, 17–20).

According to the information presented in CONABIO 2005, one of the main potential threats to the Morelet's crocodile is habitat destruction and fragmentation due to residential and infrastructure development, such as dams, roads, residential areas, and irrigated fields (CONABIO 2005, Annex 2, pp. 4–5). The information presented in CONABIO 2005 indicated that land reform and the ensuing colonization of undeveloped areas are a potential threat to the Morelet's crocodile, but the Government of Mexico has no such actions planned at this time (CONABIO 2005, p. 33). This threat of habitat degradation is ameliorated in Mexico by the Ley General de Equilibrio Ecológico y Protección al Ambiente (LGEEPA; General Ecological Equilibrium and Environmental Protection Law). This 1988 law has strict restrictions against land use changes in Mexico, especially for undisturbed habitat such as those areas used by the Morelet's crocodile (CONABIO 2005, p. 25). This law is supported by several others in Mexico that ensure the conservation of native flora and fauna in Mexico (see discussion in the Factor D section, Inadequacy of Existing Regulatory Mechanisms; also see CONABIO 2005, Annex 3).

According to the information presented by CONABIO, even in the historic context of prolonged habitat alteration, wild populations of Morelet's crocodiles remained abundant; so much so that large, commercial exploitation of the species was occurring up until federal and international protections were put in place 40 years ago. Alteration of Morelet's crocodile habitat occurring since then may have produced some additional reductions in local populations, but these reductions are not comparable to those of the past. In addition, even in areas where changes to the original environment are not reversible, evidence points to a certain degree of tolerance by Morelet's crocodiles, especially when the habitat alterations are a result of agriculture or low technology livestock production (CONABIO 2005, p. 25).

Based on surveys, it appears that the Morelet's crocodile in Mexico occurs in all 10 states from where it traditionally has been reported (CONABIO 2005, pp. 11–19). Although approximately 49 percent of the original range in Mexico has been altered, much of the altered habitat is still occupied by the Morelet's crocodile. Approximately 77,220 mi^2 (200,000 km^2) of undisturbed habitat remains in Mexico, which is equivalent to approximately 15,534 mi (25,000 km) of shoreline. The Government of Mexico protects habitat occupied by the Morelet's crocodile in 11 areas designated by the Government of Mexico as either Biosphere Reserves or Flora and Fauna Protection Areas covering a total of 7,763,147 ac (3,141,634 ha). In addition, the Ramsar Convention protects Morelet's crocodile habitat at 13 sites in Mexico covering 6,779,875 ac (2,743,718 ha). We do not have any information or data on the amount of geographic overlap, if any, between the areas of habitat protected by the Government of Mexico versus that protected by the Ramsar Convention. Therefore, we considered these two protection mechanisms as providing separate, but complementary, habitat protection as part of our analysis of habitat protection under this final rule.

We find that the information presented in the petition, as well as the additional information available to the Service, represents the best available scientific and commercial data on habitat destruction or modification for Morelet's crocodiles in Mexico. Although moderate habitat destruction or modification is currently affecting local populations of Morelet's crocodiles in Mexico, and this is likely to continue in the foreseeable future, these activities would not have a significant impact on the species because they would be subject to conservation measures under the Government of Mexico's regulatory framework. This framework will continue to provide adequate protection to the Morelet's crocodile and its habitat in the foreseeable future. Surveys conducted found Morelet's crocodiles at 63 sites across all 10 Mexican states comprising the species' entire historic range in Mexico (CONABIO 2005, p. 12). Given that Mexico contains more than 85 percent of the species' natural range and an estimated 78 percent of all wild individuals, that 7,763,147 ac (3,141,634 ha) of habitat are protected by the Government of Mexico, and that 6,779,875 ac (2,743,718 ha) of habitat are protected by the Ramsar Convention, we conclude that habitat destruction or modification is neither a threat to, nor is it anticipated to significantly impact, the Morelet's crocodile in Mexico in the foreseeable future.

Belize

The Morelet's crocodile was historically known from all six districts in Belize (from north to south): Corozal, Orange Walk, Belize, Cayo, Toledo (Anonymous 1998), and Stann Creek (Platt et al 1999, p. 397.) According to information provided by CONABIO, virtually all of the country contained suitable habitat for the species. The style of economic development in Belize has not required massive alteration of the natural environment. Thus, in general, no extensive and drastic alteration of Morelet's crocodile habitat has occurred in Belize (CONABIO 2005, p. 26). The current amount of altered versus unaltered current habitat for the Morelet's crocodile in Belize is unknown, but CONABIO estimated the current amount of potentially suitable habitat to be approximately 2,050 mi (3,300 km) of shoreline (CONABIO 2005, pp.14–19).

While the species is widespread in the northern portion of the country, it is naturally limited to a narrow region of lowlands along the coast in the southern part of Belize, which is otherwise mountainous (Schmidt 1924, p. 80; Abercrombie *et al.* 1982, pp. 12–16; Platt *et al.* 1999, p. 395; Platt and Thorbjarnarson 2000a, pp. 25–26). Teams not associated with the Mexican effort to delist the species recently surveyed these states, in part, to assess Morelet's crocodile populations in those areas. Based on recent surveys, all six districts historically known to contain Morelet's crocodiles were surveyed in a general characterization of the biodiversity of Belize (Boles 2005, p. 4; Belize Forest Department 2006, p. 22; Biological-Diversity.info Web site 2009). At Spanish Creek Wildlife Sanctuary, in the north-central part of the country, Meerman *et al.* (2004, pp. 23–24 and 30–32) determined that the Morelet's crocodile was fairly common at the site (frequency of encounter rate = 1.4–2.4 individuals per km). At Mayflower Bocawina National Park, near the coast in the southeastern part of the country, Meerman *et al.* (2003b, p. 30) unexpectedly located the Morelet's crocodile at fast-flowing streams such as Silk Grass Creek. While this specimen could have been introduced at the site, its occurrence could also be natural. Along the Macal River, in west-central Belize, Stafford *et al.* (2003, pp. 18, 20) located a breeding population of the Morelet's crocodile (frequency of encounter rate = 1.48 individuals per km (2001) and 1.25 individuals per km (2002)) at a mountainous site at 1,476 ft. (450 m) elevation (higher than expected). A total population size at the Macal River site was calculated to be, at minimum, about 94 individuals (Stafford *et al.* 2003, p. 19).

Earlier comparisons between spotlight surveys conducted in northern Belize in 1979–1980 and 1992–1997 also showed that Morelet's crocodiles were widely distributed and relatively abundant across several habitat types and levels of human accessibility (Platt and Thorbjarnarson 2000b, p. 23). In addition to an extensive system of nature reserves, including significant areas of crocodile habitat, these researchers noted relatively high Morelet's crocodile encounter rates in wetlands surrounding sugarcane fields in this area. Morelet's crocodiles were observed in canals and ditches within the municipal limits of Belize City and Orange Walk, as well as in wetlands easily accessible from many villages (Platt and Thorbjarnarson 2000b, p. 23).

Population characteristics of Morelet's crocodiles in Belize were also determined during these surveys. Size class distribution—25.4 percent adults in the 1990s, compared with 5–10 percent in an earlier study—was consistent with population recovery from past overexploitation (Platt and Thorbjarnarson 2000b, p. 24). Platt and Thorbjarnarson (2000b, pp. 23, 26) reported an overall frequency of encounter of 1.56 individuals per km; encounter rates were much higher in nonalluvial (8.20 individuals per km) and alluvial (6.11 individuals per km) lagoons than in rivers and creeks (0.95 individuals per km) or in mangrove habitats (0.24 individuals per km). While a significant, male-biased sex ratio (5.3 males per 1 female versus about 1 male per female) was identified, the reasons were unclear (Platt and Thorbjarnarson 2000a, pp. 23, 27). Based on extrapolations of habitat relationships in Mexico (which results in an estimated 2,080 mi (3,347 km) of potential habitat in Belize) and an average frequency of encounter of 2.63 individuals per km, CONABIO stated that these results suggested a total Belize population estimate for the Morelet's crocodile of about 8,803 individuals in the wild (all age classes), comprising 9 percent of the total wild population, including about 1,673 adults (CONABIO 2005, p. 18). Although this is not a typically constructed population estimate, this estimate constitutes the best available scientific and commercial data for the nationwide abundance of Morelet's crocodiles in Belize. Although Platt suggested that these overall values for Belize may be somewhat inflated because habitat in southern Belize is less suitable for Morelet's crocodiles than areas in the north (Platt 2008, pers. comm.), frequency of encounter values for Morelet's crocodile populations and total population sizes in Belize may have further increased due to continued protection for over a decade since these surveys in the 1990s. Boles (2005, p. 4) and Belize Forest Department (2006, p. 22), based on countrywide analyses, both suggested that the Morelet's crocodile had ''recovered'' in Belize and could be categorized as ''healthy.''

CONABIO did not present information about the distribution and abundance of the Morelet's crocodile in protected areas in Belize. Other information obtained by the Service, however, suggests that the species is present in many protected areas in Belize, including: Sarstoon Temash National Park (Meerman *et al.* 2003a, p. 45), Mayflower Bocawina National Park (Meerman *et al.* 2003b, p. 30), and Spanish Creek Wildlife Sanctuary (Meerman *et al.* 2004, pp. 30–31). Overall, about 18–26 percent of the national territory of Belize is under some form of protection (BERDS 2005b, p. 1; Young 2008, p. 29). In several of these protected areas, natural resource extraction is permitted from the site, thus potentially limiting these areas' contribution to the conservation status of the Morelet's crocodile. However, we have no evidence that resource extraction in these Belizean protected areas is currently or anticipated to affect significantly the Morelet's crocodile.

We find that the data presented by CONABIO, and additional data available to the Service, represent the best available scientific and commercial data on habitat destruction or modification for Morelet's crocodiles in Belize. Although habitat destruction or modification is currently affecting some local populations of Morelet's crocodiles in Belize, and this is likely to continue in the foreseeable future, we do not have any evidence that habitat destruction or modification is currently or anticipated to be a threat to the Morelet's crocodile in Belize.

Guatemala

The Morelet's crocodile was historically known from the northern portion of Guatemala (States of Petén and Alta Verapaz; Schmidt 1924, pp. 79–84). According to information provided by CONABIO, the Petén region of Guatemala was scarcely populated by humans before 1960 (an estimated 15,000 to 21,000 inhabitants in approximately 12,960 square miles (33,566 km^2) or about one third of Guatemala's area) (CONABIO 2005). In 1961, the Government of Guatemala started an official program to foster colonization in the region, and this caused environmental alteration, as well as increased human conflicts with crocodiles. Slightly more than 50 percent of the potential habitat for the Morelet's crocodile has been altered in Guatemala (CONABIO 2005, p. 26). While the current amount of altered versus unaltered habitat for the Morelet's crocodile in Guatemala is unknown, CONABIO estimated the current amount of potentially suitable habitat to be approximately 4,163 mi (6,700 km) of shoreline (CONABIO 2005, pp.14–19). According to information provided by CONABIO, studies on the status of Morelet's crocodile habitat and population in Guatemala are underway, and the potential threats to the species are under assessment (CONABIO 2005, p. 26).

Recent nationwide survey results are not available for Guatemala, but populations appear to remain in their

historical range in the northern part of the country, especially the central portion of the State of Petén, Laguna del Tigre National Park (northwestern portion of the State of Petén) (Castañeda Moya *et al.* 2000, p. 63), and the El Mirador-Río Azul National Park (ParksWatch 2002, p. 3). The Laguna del Tigre National Park, the largest national park in Guatemala and the largest protected wetland in Central America, is home to the largest numbers of Morelet's crocodiles in Guatemala (ParksWatch 2003, p. 1).

While information regarding the distribution and abundance of Morelet's crocodile in Guatemala is sparse, investigations conducted in Laguna del Tigre National Park (date unspecified, reported in 1998) estimated 4.35 individuals per km in the Sacluc River and 2.1 individuals per km in the San Pedro River, with a population structure typical of stable populations (Castañeda Moya 1998a, p. 13). Castañeda Moya (1997, p. 1; 1998a, p. 521) characterized Morelet's crocodile distribution in the northern State of Petén, Guatemala, as fragmented, with the healthiest populations in the northern region of Petén, where human impact was lower. In a follow-up study at Laguna del Tigre National Park, Castañeda Moya *et al.* (2000, pp. 62–63) reported a mean frequency of encounter rate for the entire park of 4.3 individuals per km, with maximum values of 12.28 individuals per km at Flor de Luna and 11.00 individuals per km at Laguna La Pista. The Morelet's crocodile was more frequently encountered in closed aquatic systems than in open aquatic systems. Juveniles were more frequently observed than were adults.

Based on extrapolations of habitat relationships in Mexico (which resulted in an estimated 4,159.8 mi (6,694.5 km) of potential habitat in Guatemala) and an average frequency of encounter of 2.078 individuals per km, CONABIO stated that there is an estimated total Guatemalan population of Morelet's crocodile of about 13,911 individuals in the wild (all age classes) comprising 13 percent of the total wild population, including about 2,643 adults (CONABIO 2005, p. 18). Although this is not a typically constructed population estimate, this population estimate constitutes the best available scientific and commercial data for the nationwide abundance of Morelet's crocodiles in Guatemala.

While Guatemala has regulatory mechanisms in place to protect these habitats, it appears that the Government of Guatemala, until recently, was not able to enforce them adequately. Resource extraction, drug trade, a lack of regulatory enforcement, and financial issues limited protected areas' potential contribution to the conservation status of the Morelet's crocodile ((Instituto de Agricultura, Recursos Naturales y Agrícolas, Universidad Rafael Landivar, and Asociación Instituto de Incidencia Ambiental (IARNA URL IIA) 2006, pp. 88–92). For example, the Laguna del Tigre National Park, together with the Laguna del Tigre Protected Biotope (a small area with a distinct set of environmental conditions that supports a particular ecological community of plants and animals) was considered critically threatened by drug trade, land grabs, the presence of human settlements, expanding agriculture and cattle ranching, poaching, forest fires, the oil industry, and the almost complete lack of institutional control over the area (ParksWatch 2003, p. 11). ParksWatch also deemed this national park, and its surrounding area, would not meet its biological diversity objectives in the immediate future unless urgent steps were taken (ParksWatch 2003, p. 11). However, the following year, ParksWatch noted major improvements at Laguna del Tigre since their 2003 report. We have obtained information on the specific protections recently provided to Morelet's crocodiles in the conservation areas of Guatemala, and events that reveal a commitment by the Guatemalan government to curtail illegal activities harmful to Laguna del Tigre National Park. We will go into detail in the Factor D section, *Inadequacy of Existing Regulatory Mechanisms.*

Castañeda Moya *et al.* (2000, p. 61), based on historical references, cited increased destruction of habitat due to human encroachment as having an adverse effect on the species. Based on the research at Laguna del Tigre National Park, Castañeda Moya *et al.* (2000, pp. 61, 65) indicated that sibal (sawgrass) (*Cladium jamaicense*) was extensively burned each year. This burning constituted a major impact to the Morelet's crocodile habitat, as sibal habitat offered suitable insulation, food availability, nesting cover, and protection from predators. Furthermore, the fires facilitated the expansion of savannahs consisting almost exclusively of jimbal (*Bambusa longifolia*). Studies on the Morelet's crocodile in Petén suggest fires in jimbal groves prevent Morelet's crocodiles from reproducing because fire affects nesting sites (ParksWatch 2003, p. 13). In a more general sense, the U.S. Agency for International Development (USAID) (2002, pp. 19–23) and Ruiz Ordoñez (2005, pp. 2–8) indicated several conservation threats at the national level in Guatemala, including habitat loss, habitat degradation, habitat fragmentation, overutilization of resources, environmental contamination and degradation, and the introduction of exotic species.

For the past 10 years, USAID and the Wildlife Conservation Society (WCS) having been working with other nongovernmental organizations (NGOs) and the Guatemalan government to combat these issues. In their ''Maya Biosphere Landscape Conservation Area, Guatemala, Implementation Plan FY 2008'' (WCS 2009, page 3), the WCS highlighted their central goals for ensuring the conservation of wide-ranging target species, including the Morelet's crocodile, were to contain the advance of the Laguna del Tigre agro-pastoral frontier and maintain the comparatively intact eastern bloc of the Maya Biosphere Reserve (MBR) forest. Strategies to reduce impacts to wildlife in the MBR landscape include involving people in local communities, forest concessions, governments, and NGOs in local conservation efforts; developing adaptive management strategies to address tactical threats across the landscape; and educating local communities on best management practices across the MBR and beyond. Since 2003, efforts by the WCS have reduced areas burned in the MBR in Guatemala. Through educating locals on best management practices, conducting aerial flights, utilizing remote sensing to monitor changes in forest cover and fire, and establishing and patrolling a 47-km fire break, along with regularly reporting to the Guatemalan and provincial governments and national media, WCS's efforts have resulted in a 90 percent reduction in areas burned in the Laguna del Tigre portion of the MBR ((WCS 10 year report, no date given, p. 6)).

In addition, the president of Guatemala recently deployed 250 specially trained soldiers to recover fully all the protected zones of El Petén in Laguna del Tigre National Park. The contingent, called the ''green battalion,'' will work jointly with the Guatemalan Attorney General's Office. This effort is aimed at combating drug trafficking and removal or destruction of natural and archeological resources in Laguna del Tigre, El Petén region of the MBR (Latin American Herald Tribune 2010).

El Mirador-Río Azul National Park in northeastern Guatemala is located in the department of Petén and maintains a population of Morelet's crocodiles (ParksWatch 2002, p. 3). The park is composed of two sections, which are divided by the Dos Lagunas Biotope. The western section is known as El

Mirador and the eastern part is known as Río Azul. This area is considered by World Resources Institute to be the last pristine Guatemalan rainforest. It is also one of the few protected areas that have experienced little deforestation over the years. No permanent human residents live within the park borders or in its immediate surrounding areas. El Mirador-Río Azul National Park is considered vulnerable, by ParksWatch, meaning that immediate conservation measures are not needed at this time, but monitoring is necessary to ensure the protection and maintenance of its biological diversity in the near future (ParksWatch 2002, p. 3). NGOs such as Asociación Balam, WCS-Guatemala, the Asociatión of Forest Communities of Petén (ACOFOP), the Guatemalan National Park Service (CONAP), the Guatemalan Archeological Institute (IDAEH), and the office of the Executive Secretary of the President of Guatemala formed an alliance called the ''Mesa Multisectorial para el Area Natural y Cultural de Mirador-Rio Azule.'' This alliance was formed to develop consensus among its team members regarding the long-term protection of the park and provide sustained economic contribution to the people of the MBR and of Guatemala.

While CONABIO estimated that slightly more than 50 percent of the potential habitat for the Morelet's crocodile has been altered in Guatemala, they gave no information indicating to what extent (CONABIO 2005, p. 26). Very little information has been collected about the consequences of forest fires, hunting, and habitat fragmentation to the Morelet's crocodile. However, Mexico saw the presence of the Morelet's crocodile in cultivated areas and at sites with ''intermediate'' quality habitats (CONABIO 2005, p. 13) in its own country, and Belize noted relatively high Morelet's crocodile encounter rates in wetlands surrounding sugarcane fields, canals, and ditches within the municipal limits of Belize (Platt and Thorbjarnarson 2000b, p. 23). This information suggests that the Morelet's crocodile does not require undisturbed habitat in order to occupy a site. The current amount of altered versus unaltered habitat for the Morelet's crocodile in Guatemala is unknown, but CONABIO estimated the current amount of potentially suitable habitat to be approximately 4,163 mi (6,700 km) of shoreline (CONABIO 2005, pp. 14–19).

Other Threats to the Species' Habitat

Recreational and Educational Activities

Nonconsumptive recreational or educational uses in the form of ecotourism are ongoing and may grow in magnitude in the future. While CONABIO did not present precise information about the number of companies or sites visited by tourists, an informal internet search suggested that large numbers of ecotourism companies and nature sites in all three range countries were involved in this activity. At Tikal National Park in Guatemala, for example, the number of visitors has increased from 14,594 visitors in 1981, to 141,899 visitors in 2002 (IARNA URL IIA 2006, p. 103). Many of these visitors potentially visited Morelet's crocodile areas in the Petén Region that are in the immediate vicinity of the park as part of their ecotourism experience.

While we cannot completely rule out the potential for adverse effects to the Morelet's crocodile due to disturbance from ecotourism activity in Tikal National Park, we have found no evidence of such effects. Furthermore, we do not have any information to indicate that ecotourism is likely to become a serious problem in the future. Successful ecotourism, by its very nature, relies on the continued conservation and protection of the natural resources it uses. Although the number of visitors to protected areas is increasing and the demand for ecotourism may grow in the future, the ecotourism industry has a significant incentive to ensure that its activities do not become a serious problem to the Morelet's crocodile and its habitat in the future.

Mazzotti *et al.* (2005, p. 984), however, did identify the following negative impacts associated with tourism development at Sian Ka'an Biosphere Reserve (Mexico):

(1) Habitat loss;
(2) Alteration of surface and underground water flow;
(3) Ground water pollution;
(4) Extraction of resources;
(5) Erosion and sedimentation;
(6) Decrease in biodiversity; and
(7) Reduced traditional and recreational use for local communities.

Visual pollution, including trash, as well as ''jeep safaris'' (caravans of small convertible sports utility vehicles being driven through the reserve) and boat traffic, is also increasing at Sian Ka'an Biosphere Reserve (Mazzotti *et al.* 2005, p. 992). While none of these factors was specifically linked to the Morelet's crocodile, all could apply were the situation to deteriorate. However, we do not have any information to indicate that the situation will deteriorate in the future. Biosphere Reserves in Mexico are part of the United Nations Educational, Scientific, and Cultural Organization's (UNESCO) ''Man and the Biosphere'' program and are legally protected under Mexican federal laws. Key features of biosphere reserves are core zones of complete protection of key resources surrounded by mixed-use buffer zones. These buffer zones are particularly important given the pressures on the Sian Ka'an Biosphere Reserve from tourism, and its culturally and archeologically significant areas (Mazzotti *et al.* 2005, p. 982). Recognizing these potential negative factors, geographically dispersed ecotourism involving limited numbers of visitors under controlled conditions to observe and photograph specimens from canoes, photographic blinds, or hiking trails can provide relatively benign opportunities to local residents for economic benefits that can serve as an alternative or disincentive to harvest the Morelet's crocodile (CONABIO 2005, p. 28).

There is also evidence that ecotourism, as well as scientific research and wildlife conservation, are compatible activities with respect to the Morelet's crocodile. In Mexico, for example, ecotourists accompany biologists associated with the Amigos de Sian Ka'an group as they conduct surveys of the Morelet's crocodile at Sian Ka'an Biosphere Reserve, along the eastern coast of the Yucatan Peninsula, Quintana Roo State (EcoColors Tours 2010, pp. 1). At another site, the La Ventanilla Eco-tourism Project in Oaxaca State, Mexico, international volunteers assist local residents and biologists to conserve the Morelet's crocodile, turtles, iguanas, and other species of wildlife (Volunteers for International Partnership-Mexico 2010, pp. 1–4). In Belize, tourists, as well as wildlife researchers from the United States and their Belizean counterparts, are implementing an ecological field study of the Morelet's crocodile at Lamanai Outpost Lodge and Research Station that eventually will lead to the development of a national management plan for the species (The Croc Docs 2010, pp. 1–6). If the biological data, in part collected by the ecotourists, support harvest, and effective enforcement regulations can be developed and implemented, this plan may include commercial exploitation of the Morelet's crocodile. In Guatemala, scientists and ecotourists are working cooperatively with the ProPetén group to undertake conservation work at the Scarlet Macaw Biological Station in the

Maya Biosphere Reserve (ProPetén 2009, p. 1). While these activities differ with regard to specific details, in general they provide positive conservation benefits to the Morelet's crocodile and demonstrate that ecotourism, as well as scientific research and wildlife conservation, can be compatible with respect to the species.

Agriculture, Grazing, and Infrastructure Development

Agriculture, grazing, and infrastructure development (such as dams, roads, residential areas, and irrigated fields) generally are indirect impacts in that the purpose of the action is not focused on the crocodile. These activities can be either consumptive (for example, destruction of nests and eggs by machinery) or nonconsumptive (for example, loss of access to traditional nesting or feeding sites), and are generally manifested through habitat loss or fragmentation. Depending on the nature and extent of these activities, they may have a substantial negative impact on local Morelet's crocodile populations. Although agriculture, grazing, and infrastructure development are currently affecting local populations of Morelet's crocodiles, and this is likely to continue in the foreseeable future, we do not have any evidence that these activities are currently, or anticipated to be, a rangewide threat to the Morelet's crocodile.

Summary of Factor A

Although some habitat degradation has occurred in Mexico, this threat is ameliorated by the LGEEPA. This law has strict restrictions against land use changes in Mexico, especially for undisturbed habitat such as those areas used by the Morelet's crocodile (CONABIO 2005, p. 25). The Sistema Nacional de Áreas Naturales Protegidas (SINANP) also provides significant habitat protection in Mexico. The SINANP created designated protected areas because these areas contain key or representative ecosystems or species, or ecosystems or species that are at risk and require strict control. In Mexico, at least 11 protected areas contain populations of the Morelet's crocodile (CITES 2010a, pp. 17–20). In Belize, at least three protected areas contain Morelet's crocodile populations (Meerman *et al.* 2003a, p. 45; Meerman *et al.* 2003b, p. 30; Meerman *et al.* 2004, pp. 30–31). Mexico and Belize contain the majority of all wild Morelet's crocodiles (87 percent) and the majority of the potentially suitable habitat throughout the species' range (81 percent). We find that, although habitat destruction and modification is affecting individual crocodiles locally, the overall level of habitat protection in Mexico and Belize is currently adequate, and we anticipate that it will remain so.

Based on current information, Guatemala contains the remaining 13 percent of the wild Morelet's crocodiles and the remaining 19 percent of the potentially suitable habitat throughout the species' range. Although the Morelet's crocodile occupies at least two protected areas in Guatemala (Castañeda Moya *et al.* 2000, p. 63), one, the El Mirador-Río Azul National Park, has no permanent human presence either in or surrounding the park and contains the last pristine rainforest in Guatemala, which has experienced very little deforestation. The NGO community has partnered with the President of Guatemala to establish a coalition to ensure long-term protection of this important national park, while providing for sustainable economic incentives to the people of the MBR and of Guatemala. The second protected area, Laguna del Tigre National Park, has been affected by past human encroachment, fire, deforestation, grazing, and infrastructure development. Although these factors may have affected local populations of Morelet's crocodiles, we have no evidence that it has affected the species rangewide. The government of Guatemala and the local and international NGO community have again partnered to address these issues through direct interventions, including local and international community in conservation efforts; and educating people on the use of best management practices. These efforts have resulted in a 90 percent reduction in fires in Laguna del Tigre National Park, and the successful interdiction of individuals conducting unlawful activities.

Despite the localized impacts in all three countries, the current rangewide distribution of Morelet's crocodile now closely resembles the historical rangewide distribution. The species has existing available high-quality habitat, has a healthy population distribution, is abundant at known sites, and is expanding into new sites. Even in the face of habitat alteration, this species has been shown to occupy disturbed habitat. There have been observed increases in the relative abundance of the species, and a total population size of approximately 19,400 adults in the three range countries. Species experts now widely characterize Morelet's crocodile populations as healthy. In addition, crocodilians are known to have a robust history strategy, including repeated production of offspring at intervals throughout the life cycle; long reproductive lives; high fecundity; and low egg and hatchling survival, likely enhanced by crocodilian parental care demonstrated for most species, including *C. moreletii.* The combined result is that crocodilians can sustain relatively high levels of mortality at all life stages without reducing recruitment or population growth. Thus the persistence of some anthropogenic threats at low levels such as killing, subsistence hunting, and fishing net entanglement are unlikely to constitute significant impacts to population persistence or even to recovery (Ross, 2011 pers. comm.).

Although some local factors continue to affect the habitat for Morelet's crocodile, we have no information to indicate that these local factors are of sufficient magnitude to have a range-wide impact on the species to the point that would cause the Morelet's crocodile to meet the definition of either an endangered or a threatened species. Therefore, we find that the present or threatened destruction, modification, or curtailment of its habitat or range is not likely to threaten or endanger the Morelet's crocodile in the foreseeable future.

Factor B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Commercial Harvest (Legal and Illegal Trade)

The Morelet's crocodile was included in Appendix I of CITES on July 1, 1975. Species included in Appendix I are species threatened with extinction that are or may be affected by trade. CITES prohibits international trade in specimens of these species unless the trade is not found to be detrimental to the survival of the species, the specimens in trade were legally acquired, and the purpose of the import is not for primarily commercial purposes or the specimen meets one of the exemptions established under the CITES Treaty. A more thorough explanation of CITES is found in the ''*Convention on International Trade in Endangered Species of Wild Fauna and Flora''* discussion under the section *Factor D. Inadequacy of Existing Regulatory Mechanisms.*

Overexploitation for commercial purposes prior to 1970 is widely accepted as the primary cause of a drastic, rangewide population decline of Morelet's crocodile (Platt and Thorbjarnarson 2000b, p. 21; CONABIO 2005, p. 27). Historically, commercial overexploitation, through the harvest of adult animals from the wild, was a

much greater threat to the Morelet's crocodile than habitat loss. During the first half of the 20th century, hundreds of thousands of skins per year were marketed (CITES 2008, pp. 17, 20). The precise magnitude of the trade is unclear, however, because trade data for the Morelet's crocodile was recorded at a higher taxonomic level incorporating other crocodilians. See, for example, Loa Loza 1998a, pp. 134–135 and Arroyo-Quiroz *et al.* 2007, p. 933. It is reported that prior to 1975, hide dealers in Belize purchased up to 12,000 skins annually, and an unknown number of skins were exported illegally in contravention to Mexican law (Plat and Thorbjarnarson 2000b, p. 21). Precise estimates of historical trade from Mexico or Guatemala were unavailable. Even now, the commercial market for designer fashion items made from high-quality crocodile skins, such as leather belts, footwear, wallets, and handbags, is highly lucrative. For example, a single pair of shoes may retail for hundreds of dollars, a handbag for several thousand dollars, and a tote bag for tens of thousands of dollars.

Legal Trade

In 1997, the Government of Mexico established a system for registering, supervising, and enforcing Unidad de Manejo y Administración (UMAs; Conservation Management and Administrative Units) for intensive reproduction of economically valuable natural resources, including the captive breeding of Morelet's crocodiles (CONABIO 2005, Annex 3, pp. 3–5). Commercial use of Morelet's crocodiles in Mexico for domestic trade was strictly limited to animals raised in closed-cycle, captive-breeding operations regulated by the Government of Mexico under the UMA system. For international trade, commercial trade was restricted to animals raised in these closed-cycle, captive-breeding operations registered with the CITES Secretariat. In order for these closed-cycle, captive-breeding operations to be successful, great care was given to satisfying the biological requirements of the species (Cremieux *et al.* 2005, p. 417; Brien *et al.* 2007, pp. 1–26). According to León Velázquez (2004, p. 52), there were approximately 30,000 Morelet's crocodiles in captive-breeding facilities in Mexico in 2004. There were 38,449 Morelet's crocodiles housed in 19 Mexican closed-cycle, captive-breeding operations in 2008 (CITES 2010a, p. 24). Currently, the annual production of Morelet's crocodiles in Mexican closed-cycle, captive-breeding operations does not exceed 40,000 individuals (CITES 2010a, p. 8).

Under Mexican law, closed-cycle, captive-breeding operations wishing to make their Morelet's crocodiles available for commercial use must demonstrate that they are able to go beyond the F2 generation of reproducing individuals. This requirement supports the use of Morelet's crocodiles that is compatible with conservation of the species by offsetting the demand for crocodiles taken from the wild. Such facilities produced a variety of items including skins/hides, meat, live individuals as pets, stuffed figurines, and leather products (fashion accessories) for both domestic and international trade.

Based on CITES annual reports for the period 1996–2005, Caldwell (2007, pp. 6–7) noted relatively low levels of international legal trade in products from Mexican captive-breeding operations during 1996–1999 (fewer than 200 skins/year), but higher levels during 2000–2005 (2,430 skins in 2001; 1,591 skins in 2002; and below 1,000 skins per year during the rest of the period). Japan has been the main importer of products from Mexican captive-breeding operations, with lesser quantities going to France, Italy, the Republic of Korea, and Spain (Caldwell 2007, p. 6).

The United Nations Environment Programme—World Conservation Monitoring Centre (UNEP–WCMC) manages a trade database on behalf of the CITES Secretariat. Each Party to CITES is responsible for compiling annual reports to the CITES Secretariat regarding their country's trade in species protected under CITES. UNEP–WCMC enters the data from these annual reports into a trade database, which is used to analyze trade in CITES specimens. Due to the time needed to compile the data, the most recent year for which comprehensive trade statistics are available is normally 2 years prior to the current year.

In general, prior to 2010, international legal trade consisted of small quantities of unfinished hides/skins or finished leather products, exported primarily from Mexico to Japan and European countries, as well as biological specimens destined for research. These countries process the unfinished hides/skins into leather products such as belts, footwear, wallets, and handbags that in turn are sold within their own country or re-exported for sale to other countries. Due to the listing status of the species under the Act, the United States cannot be a commercial destination for Morelet's crocodile skins and products. It is currently illegal to import Morelet's crocodile skins and products into the United States, unless the import is for scientific or enhancement purposes.

In 2010, the Government of Mexico submitted a proposal to the 15th Meeting of the CITES Conference of the Parties (CoP15) to transfer the Morelet's crocodile throughout its range to Appendix II of CITES with a zero quota for trade in wild specimens because the Government of Mexico concluded that the Morelet's crocodile no longer met the criteria for inclusion in Appendix I (see Factor D, *Mexico's Proposal To Transfer the Morelet's Crocodile to CITES Appendix II;* CITES 2010a, p. 1).

According to the 2010 CITES proposal to transfer the Morelet's crocodile to Appendix II, the UNEP–WCMC CITES Trade Database showed that, until 2007, the parts and derivatives of the Morelet's crocodile most commonly found in trade were skins, skin pieces, and leather products, although other products include live specimens, eggs, bodies, scales, skulls, and shoes were also traded. The largest exporter between 2001 and 2007 was Mexico (8,498 skins, 750 skin pieces, and 1,193 leather products), followed by Belize with 116 bodies, 766 eggs, and 3,124 specimens for scientific purposes (exported to the United States). The major importing countries were Japan (6,170 skins), United States (3,124 specimens for scientific purposes), Italy (1,219 skins), the Republic of Korea (560 skins), France (375 skins), and Spain (162 skins) (CITES 2010a, p. 8).

According to the CITES (CITES 2010a) proposal to transfer the Morelet's crocodile to Appendix II, the national harvest of animals from closed-cycle operations authorized in Mexico amounts to fewer than 2,000 skins per year since the year 2000. In the period between 2000 and 2009, 119 CITES export permits were issued in Mexico for a total of 12,276 Morelet's crocodile skins. However, the total potential production from closed-cycle, captive-breeding operations were about 16,500 individuals and approximately 10,000 skins per year (CITES 2010a, p. 7).

We examined the information on Mexico's closed-cycle, captive-breeding operations in Annex 3 of the 2010 CITES proposal. According to the information provided in the Annex, there were 19 closed-cycle, captive-breeding operations registered as UMAs for the Morelet's crocodile in Mexico. Only 4 of the 19 UMAs had a captive population sufficient to support commercial trade, and only 2—both of which were registered with CITES—of these 4 could support international commercial trade. As of 2008, the captive population in these four UMAs ranged from 1,237 to 28,673 individuals.

The two UMAs that were not registered with CITES had the potential to produce 1,100 skins per year for local commercial trade (CITES 2010a, Annex 3, p. 24). The population levels for the remaining 15 UMAs were relatively low by comparison, ranging from 6 to 576 individuals. Rather than supporting commercial trade, 4 of the remaining 15 UMAs supported exhibition, 7 had no commercial production, 3 contributed to the economic support of the local community, and 1 was used for research.

Three of these 19 Mexican captive-breeding operations were also registered with CITES, and could therefore commercially trade Morelet's crocodile products internationally, as well as domestically while the species was listed under Appendix I. However, one of these CITES-registered captive-breeding operations contains only six individuals, and is used for exhibition purposes. Only two of the three CITES-registered captive breeding operations commercially produce enough Morelet's crocodile skins with the annual production potential for international trade. These two captive-breeding operations have the potential to produce an estimated 2,500 skins annually for international trade (CITES 2010a, pp. 7 and 24, Annex 3). Please see the discussion in the Factor D section, Inadequacy of Existing Regulatory Mechanisms, for additional information on the three CITES-registered captive-breeding operations.

There are no captive-breeding facilities in Belize or Guatemala that are providing specimens or skins for trade, either domestically or internationally under the CITES captive-breeding exception (CITES 2010c). In Belize, Morelet's crocodiles are officially protected from commercial harvest. Platt and Thorbjarnarson (2000b) found no evidence of commercial poaching of Morelet's crocodiles for skins or meat in Belize (Platt and Thorbjarnarson 2000b, p. 27). Reportedly, the species is not subject to commercial activities in Guatemala, given that Guatemala's Comisión Nacional de Áreas Protegidas (CONAP; National Commission on Protected Areas, also known as the Guatemalan National Park Service) prohibits the export and trade in wild specimens of endangered species (CITES 2010a, p. 7).

Illegal Trade

According to the 2010 CITES proposal to transfer the Morelet's crocodile to Appendix II, the UNEP–WCMC CITES Trade Database showed few illegal movements of parts and derivatives of the Morelet's crocodile between 1975 and 2007 from Mexico, Guatemala, and Belize, with the United States as the only destination. This suggests that there is a very low level of illegal trade and that it is only with the United States; however, enforcement actions are not a required field for CITES Annual Reports. Unlike the United States, most countries do not specify the action taken on imports. Thus, the fact that illegal trade to the United States is documented in the WCMC database does not mean that this is the only illegal trade in the species. That said, between 1982 and 2005, items found to have been ''illegally'' imported to the United States from Mexico were mainly leather products (308) and shoes (419 pairs). It is quite possible that these U.S. imports derived from legal operations in Mexico, but were precluded from import into the U.S. because of the Morelet's crocodile's endangered status under the Endangered Species Act.

Considering the same caveats pertaining to WCMC data, there were eight records of illegal trade occurring from Guatemala (between 1989 and 1997), mainly involving pairs of shoes (27), and one case in Belize, which involved the export of 31 eggs in 1995. Regarding Guatemala, Castañeda-Moya (1998) stated that illegal capture of the species continued in the Petén region in that year. However, he admitted that the volume of such activity had decreased compared to the situation 25 years before (CITES 2010a, p. 8).

Recent data available on illegal trade in the Morelet's crocodile between 1975 and 2007 showed that the United States reported illegal imports (UNEP–WCMC CITES Trade Database 2010a). The data on illegal imports are based on the numbers of items that were seized and confiscated by law enforcement personnel in both the United States and in other countries. This information is not included in CITES annual reports for each country; the United States is the exception. The majority of the illegal Morelet's crocodile parts and derivatives confiscated upon arrival into the United States between 1975 and 2007 came from Mexico (20 skins, 28 handbags, 243 leather items, 419 pairs of shoes, 3 watch straps, 9 bodies, 10 garments, 2 live animals, and 65 small leather products). Again, these items could have come from legal operations in Mexico, but were a violation at the time under the Act due to the Morelet's crocodile's endangered status. A significantly smaller number of illegal items originated from Guatemala (1 skin, 2 handbags, 1 leather item, 27 pairs of shoes, and 1 body) and Belize (31 eggs). The majority of the illegal trade reportedly began in 1985, but began to decline steadily starting in 2000. Between 2005 and 2007, there were only a few reported illegal imports of Morelet's crocodile into the United States, and these were small leather products from Mexico (UNEP–WCMC CITES Trade Database 2010b).

The Government of Mexico's Federal Prosecutor for Environmental Protection (PROFEPA) has investigated illegal trade in live animals, presumably for the pet trade. A potential illegal market in live animals is under analysis, and would be expected to involve the Mexican cities of Guadalajara, Monterrey, and Mexico City (Mexico 2006, p. 41). Illegal harvest or killing of individuals perceived as threats to humans or livestock cannot be completely precluded, but enforcement of controls on domestic and international trade severely limit any commercial incentives. PROFEPA performs inspections to prevent laundering of wild Morelet's crocodile specimens and other illegal activities. According to Mexico (Mexico 2006, pp. 39–42), 85 specimens were confiscated in 2003, 2 in 2004, 80 in 2005, and 14 in 2006 (partial results). In addition, and according to Paola Mosig, Program officer for TRAFFIC North America in Mexico, 20 seizures with a total of 48 live specimens, as well as 25 belts and 2 wallets were confiscated in 2007 (Mosig 2008, pers. comm.). According to TRAFFIC, the Wildlife Trade Monitoring Network, these seizures are indicative of a strong enforcement program that deters illegal trade (Mosig 2008, pers. comm.).

Current Trade

In accordance with Article II, paragraph 2(a) of CITES, and CITES Resolution Conf. 9.24 (Rev CoP14) Annex 1, the Government of Mexico submitted a proposal (CoP15 Prop. 8) to CoP15 to transfer the Morelet's crocodile throughout its range to Appendix II of CITES with an annotation requiring a zero quota for wild specimens that was further amended by adding the phrase, ''for commercial purposes'' (CITES 2010a, p. 1). The Government of Guatemala opposed Mexico's CITES proposal as it pertains to the species in Guatemala, based on the limited knowledge of the population and population trends in Guatemala; the threats to the species from deforestation and pollution in Guatemala; and the possibilities of illegal, cross-border trade taking place from Guatemala to Mexico. As a result, the parties to CITES agreed that Morelet's crocodiles in Mexico and Belize should be transferred to CITES Appendix II but that Morelet's

crocodiles in Guatemala remain in CITES Appendix I (CITES 2010b, p. 2). The change in CITES status for Morelet's crocodiles in Mexico and Belize became effective on June 23, 2010. Because of the zero quota annotation, transferring the Morelet's crocodile to CITES Appendix II precludes the trade of wild specimens for commercial purposes and therefore should not create additional pressure on wild populations in any of the range states, as long as enforcement remains effective. Consequently, international commercial trade in Morelet's crocodiles under CITES is currently limited to individuals from sources other than wild populations. However, once the Appendix-II listing went into effect for Morelet's crocodiles in Mexico and Belize, international trade of Morelet's crocodiles in Mexico and Belize under CITES was no longer limited to facilities that are registered with the CITES Secretariat pursuant to the resolution on registration of operations that breed Appendix-I animal species for commercial purposes (Resolution Conf. 12.10 (Rev. CoP15)).

According to Mexico's 2010 CITES proposal, the current level of international trade in the Morelet's crocodile is around 8,600 individuals in 10 years (an average of 860 individuals per year). The Morelet's crocodile represents only a small fraction of the global trade in crocodilians, far behind the market leaders: brown spectacled caiman (*Caiman crocodilus fuscus*), American alligator (*Alligator mississippiensis*), and Nile crocodile (*Crocodylus niloticus*). Current trends in international trade do not indicate a threat to the Morelet's crocodile in the wild (CITES 2010a, p. 8). In addition, the Government of Mexico's proposal to move the Morelet's crocodile to CITES Appendix II allows only individuals from sources other than wild populations to be exported, and this provision remains in effect with the zero quota for wild specimens traded for commercial purposes. The risk of laundering of wild specimens through farms is very low, because the quality of skins produced in captivity is much higher than wild-caught skins, and demand in international trade focuses on high-quality skins (CITES 2010a, pp. 8, 23). It should be noted that there are a number of CITES-recognized production methods that are not ''wild'' and not ''bred in captivity.'' Mexico or any other country is free to propose a change to the annotation at the next CoP removing this limitation. However, there is no indication at this time that a change is imminent.

To see if our results would be comparable to Mexico's assessment, we queried the UNEP–WCMC CITES Trade Database for the number of Morelet's crocodile skins legally exported between 1998 and 2008, and found similar results for the current level of legal trade cited above by the Government of Mexico. According to the UNEP–WCMC CITES Trade Database, Mexico exported 8,780 skins between 1998 and 2008, an average of 878 skins per year (UNEP–WCMC CITES Trade Database 2010b). Two of the previously CITES-registered captive-breeding operations in Mexico have the potential to produce 2,500 skins per year for international trade (CITES 2010a, Annex 3, p. 24), which is more than adequate to meet the current demand for legal trade of fewer than 900 skins per year. Now that this rule is final, Morelet's crocodile products may be imported into the United States and the demand for international trade may increase. However, we do not believe this potential increase in international trade is likely to threaten or endanger wild Morelet's crocodiles due to the adequate supply of captive-bred individuals in Mexico available for legal international commercial trade under CITES.

Besides CITES and the Act, no other international measures control the cross-border movement of the Morelet's crocodile (CITES 2010a, p. 10). When this final rule is effective, (see **DATES** above), the prohibitions of the Act are removed, and Morelet's crocodile parts and products may be imported into the United States for commercial purposes, provided they do not originate in Guatemala. However, cross-border movement of the Morelet's crocodile throughout its range will still be regulated through CITES (Appendix II for Mexico and Belize; Appendix I in Guatemala).

Subsistence Harvest

The overharvest for commercial purposes, other than subsistence harvest, was the primary reason for the Morelet's crocodile listing under the Act and under CITES. Although subsistence harvest has historically had an impact on some local populations of Morelet's crocodiles, these impacts have diminished over time and do not currently have a significant impact on the species as a whole.

Indigenous cultures in Mexico, Belize, and Guatemala have a long history of using the Morelet's crocodile for subsistence and cultural purposes (Maimone Celorio *et al.* 2006, pp. 40–43; Zamudio 2006, pp. 5–8; Méndez-Cabrera and Montiel 2007, p. 132). Historically, the Maya Indians in Mexico consumed small quantities of the eggs and meat of the Morelet's crocodile (Maimone Celorio *et al.* 2006, pp. 40–43; Zamudio 2006, pp. 5–8; Méndez-Cabrera and Montiel 2007, p. 132). Hunting and harvest techniques were based on traditional knowledge by these people of the behavior and ecology of the Morelet's crocodile (Cedeño-Vázquez and Zamudio Acedo 2005, pp. 8–9). More recently (1965–1980), and in response to a demand by outside buyers and businessmen, Maya hunters harvested large quantities of hides for commercial purposes, but that activity now has largely been discontinued (Zamudio *et al.* 2004, p. 344).

Indigenous and nonindigenous people in Belize, generally poor farmers, also engaged in large-scale, commercial harvest of hides during the previous century, but that practice was primarily based on economic instead of cultural reasons (Hope and Abercrombie 1986, p. 146). Abercrombie *et al.* (1982, p. 19) made a distinction between master hunters in Belize, generally older men who made extensive forays into the forest in search of specific game species, and part-time hunters, generally younger men who made short-term, opportunistic outings and often harvested Morelet's crocodiles. Among other uses, the Morelet's crocodile also has important roles in indigenous art, medicine, and religion (Stocker *and Armsey,* 1980, p. 740; Cupul-Magaña 2003, pp. 45–48), and is used locally for handicrafts, jewelry, decorations, and curios (BERDS 2005a, p. 1). Meerman *et al.* (2003a, p. 49) noted a relative scarcity of fish and fish predators such as crocodiles in the Sarstoon Temash National Park in Belize. They suspected that fish populations are depressed, and that over-fishing by humans must play a role. People engaged in fishing along the Upper Temash River also annually collect Morelet's crocodile eggs from nests located along water channels for human consumption. In some years, one or more nests escape discovery, so the eggs are not collected. As a result, baby crocodiles are subsequently seen that year. Heavy fishing also reduces the potential prey base for the Morelet's crocodile. The heavy predation on eggs together with the depletion of the Morelet's crocodile's prey base may be responsible for the low crocodile count along the river (Meerman *et al.* 2003a, pp. 42, 45).

Castañeda Moya (1998a, p. 521; 1998b, p. 13) listed illegal hunting as a threat to Morelet's crocodile in the Petén region of Guatemala, but did not provide a numerical estimate of the

take. ARCAS, an animal welfare group in Guatemala, reported the rescue or recovery of 49 live individuals (about 8 per year), most likely from pet dealers or private individuals, during the period 2002–2007 (ARCAS 2002, p. 3; 2003, p. 2; 2004, p. 2; 2005, p. 2; 2006, p. 3; 2007, p. 3). We do not have any information describing the effect of these threats on the status of wild populations in Guatemala.

Although subsistence harvest continues to affect negatively some local populations of the Morelet's crocodile, the impacts appear to be very small. We have no evidence that subsistence harvest is currently or anticipated to significantly affect the Morelet's crocodile throughout its range. The current rangewide distribution of the Morelet's crocodile closely mirrors the historical rangewide distribution, with a total population size of approximately 19,400 adults in the three range countries.

Scientific Research

Scientific research in and of itself also constitutes a use of the Morelet's crocodile. Research in the three range countries has mainly focused on field surveys for the occurrence of the species, relative to abundance and habitat quality, which do not require removal of specimens. Research protocols followed so far have been those accepted worldwide and do not involve significant alteration of habitat or behavior (CITES 2010a, p. 7). Several scientific research projects on the Morelet's crocodile have focused on field surveys that involve capture, handling, or invasive techniques to identify, for example, the species, sex, or size class of the specimen, as well as to collect biological specimens or to attach an identification tag. If conducted according to standard protocols, these physical activities pose little risk of injury or disturbance to the subject crocodiles. Several studies have also entailed, for example, night surveys using bright spotlights (Castañeda Moya *et al.* 2000, p. 62), stomach flushing (Platt *et al.* 2006, p. 282), collection of small blood samples (Dever *et al.* 2002, p. 1079), or the gathering of nonviable eggs from nests for contaminants analyses (Rainwater *et al.* 2002a, p. 320). None of these studies has cited any negative effects due to handling or observation on the Morelet's crocodile populations.

All three range countries regulate scientific research and collection. According to the UNEP–WCMC CITES Trade Database, 3,124 specimens were exported for scientific purposes from Mexico to the United States. From an administrative standpoint, a permit at the state or Federal level regulates the collection of biological samples for scientific purposes in Mexico. In Mexico, the Mexican Endangered Species List (NOM–126–SEMARNAT–2000) regulates the collection of biological samples from wild species for scientific use. In addition, the Governments of Belize and Guatemala regulate scientific collection and research. In Belize, this type of export is subject to strict protocols and provisions of the Wildlife Protection Act (CITES 2010a, p. 7).

With the Appendix-II designation for Morelet's crocodiles in Mexico and Belize, individuals or institutions wishing to import scientific samples originating from those countries will no longer be required to obtain a CITES import permit. However, the CITES import permit requirement will still be in effect for Guatemala, and CITES export permits or re-export certificates, regardless of the country of origin, will be required. The elimination of import permits, while continuing the CITES requirement for export permits and re-export certificates, may result in additional scientific collecting and research to benefit the species while ensuring that adequate protections for the species remain in place (see the Factor D section, Inadequacy of Existing Regulatory Mechanisms, below).

In conclusion, we are not aware of any evidence that utilization of the Morelet's crocodile for scientific research purposes poses anything more than a low risk to the subject individuals; furthermore, risks at the population level are probably negligible. To the contrary, these studies (surveys and sampling) provide useful information essential to monitoring the status and continued health of individuals as well as populations. These studies also allow ecotourists in these countries to work with the scientific community in the collection of Morelet's crocodile data (Volunteers for International Partnership 2009, pp. 1–4.) This provides ecotourists with an opportunity to observe the Morelet's crocodile in its native habitat and to gain firsthand knowledge about the conservation of the species.

Ranching

Although the Belize-Guatemala-Mexico Tri-national Strategy for the Conservation and Sustainable Use of Morelet's Crocodile (see the Post Delisting Monitoring section, below) includes long-term plans for ranching, none of the range countries have given any indication they plan to ranch Morelet's crocodiles within the foreseeable future.

Summary of Factor B

While uncontrolled commercial harvests nearly extirpated the Morelet's crocodile, the species has largely recovered because of being protected under CITES and the Act in the early 1970s, as well as the implementation of CITES trade controls by all three range countries. All of the range countries currently continue to prohibit harvest of wild Morelet's crocodiles.

Illegal international and domestic trade still occurs, but levels remain low. Any incidence of illegal killing that may have occurred has not prevented the observed population increase of the species. The potential remains for illegal cross-border trade, as well as the laundering of wild specimens through existing captive-breeding operations in Mexico, but enforcement in Mexico is relatively strict. Given the increased effectiveness of law enforcement personnel with regard to the implementation of CITES, the increased supply of captive-bred Morelet's crocodiles in Mexico that are now available for commercial trade as a result of the Morelet's crocodile's transfer to CITES Appendix II, and the increasing awareness of these regulations by the public, we anticipate that illegal trade in wild Morelet's crocodiles will decrease in the majority of the species' range in the foreseeable future.

The Government of Mexico's Federal Prosecutor for Environmental Protection (PROFEPA) performs inspections to prevent laundering of wild Morelet's crocodile specimens and other illegal activities. In Belize, the importation and exportation of wildlife requires a permit and is subject to strict protocols and provisions of the Wildlife Protection Act; hunting of scheduled species for scientific or educational purposes in Belize also requires a permit. There was a declining trend in seizures of illegal specimens and products from 1998–2007. According to TRAFFIC, these seizures are indicative of a strong enforcement program that deters illegal trade (Mosig 2008, pers. comm.).

Other uses such as scientific research are either benign or involve relatively small numbers of Morelet's crocodiles. In addition, and given the steps that the Government of Mexico is taking internally to promote the sustainable commercial use of Morelet's crocodiles, we anticipate that commercial uses will increase in the foreseeable future, especially in Mexico, but that captive-bred specimens will be used instead of wild individuals.

In conclusion, we find that the overutilization for commercial, recreational, scientific, or educational purposes is not a significant factor affecting the Morelet's crocodile throughout its range, both now and for the foreseeable future.

Factor C. Disease or Predation

Inter-specific interactions, namely disease and predation, can have significant impacts on the conservation status of a species. At the time CONABIO petitioned us to delist the Morelet's crocodile, disease was not considered a significant conservation threat to the Morelet's crocodile. However, the West Nile Virus (WNV) has been detected in several Mexican populations of the Morelet's crocodile. According to Farfán-Ale *et al.* (2006, pp. 910–911), six specimens tested negative to the WNV at the Mérida Zoo, Yucatan State, Mexico, during 2003–2004, while six of seven specimens tested positive to the WNV at Ciudad del Carmen, Campeche State, Mexico, in 2004. All crocodiles, including those not sampled, showed no signs of illness at the time of the testing or during the 3 months that followed (Farfán-Ale *et al.* (2006, p. 911).

In a separate survey conducted during May–October 2005, Hidalgo-Martínez *et al.* (2008, p. 80) detected the WNV in six of seven Morelet's crocodiles at Zoológico La Venta, Villahermosa, Tabasco State, Mexico. All animals were healthy at the time of serum collection, and none had a history of WNV-like illness. The presence of WNV antibodies in animals from those zoos demonstrated the presence of WNV in those regions and indicated a potential risk of infection in animals. The magnitude of that potential risk, however, has not been determined. West Nile Virus was responsible for a significant number of deaths of farmed American alligators in the U.S. State of Georgia during separate outbreaks in 2001 and 2002 (Farfán-Ale *et al.* 2006, p. 908). However, we do not have any information to indicate that WNV causes illness in the Morelet's crocodile. The sample sizes in the above studies on Morelet's crocodile were small; much larger studies are needed. However, the best available information does not suggest that WNV is a threat or likely to become a threat.

Predation on Morelet's crocodile eggs and juveniles is a common natural phenomenon, posing no risk to healthy populations. They are preyed upon more frequently at the juvenile stage by many birds and medium-sized mammals (CITES 2010a, p. 4). Larger juveniles and subadults are less susceptible than small juveniles are to predation, and only large carnivores such as jaguars (*Panthera onca)* (Navarro Serment 2004, p. 57) pose a risk to adult crocodiles. Larger Morelet's crocodiles may prey upon the juveniles of their species. However, this tends to act as an early factor promoting population regulation and adult spacing. Aggressive interactions among adults seem to be reduced by this mechanism, especially in populations with too many adults. In populations with a steady state of age distribution, cannibalism usually remains at a minimum (CONABIO 2005, p. 29). We are unaware of any unnatural rates of predation affecting any age class of Morelet's crocodile, and we have no indication that predation will exacerbate other threats to the species in the future.

Other interspecific interactions can also affect the conservation status of a species. The Morelet's crocodile and the American crocodile co-occur and may compete with each other for resources along the freshwater-saltwater interface in coastal Mexico and Belize. Platt and Thorbjarnarson (2000a, p. 16; 2000b, pp. 24–26) reported relatively higher frequency of encounter rates for the Morelet's crocodile at alluvial and nonalluvial lagoons, mangrove forest, and rivers and creeks, collectively characterized as inland sites, while the American crocodile was relatively more abundant in offshore cays and the Turneffe Atoll. These differences were attributed to the smaller body size of the Morelet's crocodile, as well as past exploitation patterns by hunters and subsequent niche expansion by this species (Platt and Thorbjarnarson 2000b, p. 26). There was no indication, however, that interspecific competition between the Morelet's and the American crocodiles was a serious conservation problem.

Parasites have been also reported for the Morelet's crocodile, but have not been identified as a conservation threat. In Mexico, trematodes (parasitic flatworms commonly called flukes) and nematodes (unsegmented worms commonly called roundworms) have been reported (Moravec and Vargas-Vázquez 1998, p. 499; Moravec 2001, p. 47) from the Yucatan Peninsula, but health problems with the crocodile hosts were not noted. Rainwater *et al.* (2001a, p. 836) reported ticks (*Amblyomma dissimile* and *Amblyomma* sp.), but noted that parasitism by ticks on the Morelet's crocodile was rare in Belize and elsewhere.

Padilla Paz (2008, p. vi) characterized hematology, body index, and external injuries for 103 Morelet's crocodiles from the northern wetlands of Campeche State, Mexico. These variables were used to characterize the health of the animals. Captive Morelet's crocodiles evaluated for that study presented significantly more injuries than did wild individuals. Parasitism with nematodes (*Paratrichosoma recurvum*) was greater in wild crocodiles than in captive individuals. No serious health issues were identified in individuals in either group (Padilla Paz 2008, pp. 67–68).

Individual Morelet's crocodiles can also have physical issues that can affect their well-being. Rainwater *et al.* (2001b, pp. 125–127) reported 2 individuals among 642 Morelet's crocodiles captured in Belize with a missing forelimb. Known in the technical literature as ectromelia, this condition was probably the result of congenital defects and not due to an injury. Both individuals otherwise appeared to be in good condition.

Summary of Factor C

While the full impact of WNV on the Morelet's crocodile has yet to be determined, there is no indication at present that WNV poses a threat to the species, and other interspecific interactions do not appear to be adversely affecting the Morelet's crocodile. In conclusion, we find that neither disease nor predation is a significant factor affecting the Morelet's crocodile throughout its range, both now and for the foreseeable future.

Factor D. Inadequacy of Existing Regulatory Mechanisms

CITES

CITES (the Convention, or Treaty) is an international agreement between member governments to ensure that the international trade in plants and wildlife does not threaten the species' survival. It provides varying degrees of protection to more than 30,000 species of animals and plants, whether they are traded as live specimens, parts, or products. Countries that have agreed to be bound by the Convention (that have ''joined'' CITES) are known as Parties. Although CITES is legally binding on the Parties, it does not take the place of national laws. Rather, it provides a framework to be respected by each Party, which has to adopt its own domestic legislation to ensure that CITES is implemented at the national level. For many years, CITES has been among the international conservation agreements with the largest membership, with now 175 Parties (*http://www.cites.org*).

CITES works by subjecting international trade in specimens of selected species to certain controls. Trade includes any movement into or out of a country and is not limited to commercial movement. All import, export, re-export, and ''introduction from the sea'' of species covered by the Convention have to be authorized through a permitting system. The species covered by CITES are listed in three Appendices, according to the degree of protection they need (CITES 2009c).

Appendix I include species threatened with extinction that are or may be affected by trade. Trade in specimens of these species is permitted only in exceptional circumstances. Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival. Appendix III includes species that have been unilaterally listed by a Party to assist in the implementation of the listing Party's national legislation to conserve and monitor trade in the listed species. The Conference of the Parties (CoP), which is the decision-making body of the Convention and comprises all its member countries, has agreed on a set of biological and trade criteria to help determine whether a species should be included in Appendices I or II. As Appendix-III listings are a unilateral decision, Parties do not need to abide by the same biological and trade criteria adopted by the Parties. At each regular meeting of the CoP, Parties submit proposals based on those criteria to amend these two Appendices to add, remove, or reclassify species (such as the Government of Mexico's 2010 proposal to transfer the Morelet's crocodile from Appendix I to Appendix II). Parties discuss these amendment proposals during the CoP, and then they are submitted for adoption by the Parties (*http://www.cites.org*).

A specimen of a CITES-listed species may be imported into or exported (or re-exported) from a Party only if the appropriate permit or certificate has been obtained prior to the international trade and presented for clearance at the port of entry or exit.

Regulation of Trade in Appendix-I Specimens

Both an export permit or re-export certificate must be issued by the country of export and an import permit from the country of import must be obtained prior to international trade for Appendix-I species. An export permit may only be issued if: (1) The country of export determines that the export will not be detrimental to the survival of the species; (2) the specimen was legally obtained according to the animal and plant protection laws in the country of export; (3) live animals or plants are prepared and shipped for export to minimize any risk of injury, damage to health, or cruel treatment; and (4) an import permit has been granted by the importing country. Likewise, the requirements for a re-export certificate are that the country of re-export determines: (1) That the specimen was imported into their country in accordance with CITES; (2) that live animals or plants are prepared and shipped for re-export to minimize any risk of injury, damage to health, or cruel treatment; and (3) that an import permit has been granted.

Issuance of import permits for Appendix-I species will also need a determination from the country of import that the import will not be for purposes that are detrimental to the survival of the species, the proposed recipient of live animals or plants is suitably equipped to house and care for them, and the purpose of the import is not for primarily commercial purposes. Thus, with few exceptions, Appendix-I species cannot be traded for commercial purposes.

Regulation of Trade in Appendix-II Specimens

In contrast to the trade requirements for an Appendix-I species, CITES does not require an import permit from the destination country as a condition for the export and re-export of an Appendix-II species, unless it is required by the destination country's national law. However, an export permit or re-export certificate is required from the exporting country prior to the international trade taking place. An export permit may only be issued for Appendix-II species if the country of export determines that: (1) The export will not be detrimental to the survival of the species; (2) the specimen was legally obtained according to the animal and plant protection laws in the country of export; and (3) live animals or plants are prepared and shipped for export to minimize any risk of injury, damage to health, or cruel treatment.

A re-export certificate may only be issued for Appendix-II species if the country of re-export determines that: (1) The specimen was imported into their country in accordance with CITES and (2) live animals or plants are prepared and shipped for re-export to minimize any risk of injury, damage to health, or cruel treatment.

Parties to CITES are required to monitor both the export permits granted and the actual exports for Appendix II species. If a Party determines that the export of an Appendix-II species should be limited in order to maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs and well above the level at which the species might become eligible for inclusion as an Appendix-I species, then that Party must take suitable measures to limit the number of export permits granted for that species (CITES article IV, paragraph 3).

CITES Registered Captive-Breeding Operations

Prior to the Morelet's crocodile in Mexico and Belize being downlisted to Appendix II, it could be treated as an Appendix-II species and internationally traded commercially *only* if the specimen originated from a captive-breeding operation registered with the CITES Secretariat in accordance with CITES Resolution Conf. 12.10 (Rev. CoP15) ''Guidelines for a procedure to register and monitor operations that breed Appendix-I animal species for commercial purposes.'' These captive-breeding operations may only be registered if specimens produced by that operation qualify as ''bred in captivity'' according to the provisions of Resolution Conf. 10.16 (Rev.). To qualify as bred in captivity, specimens must be born in a controlled environment where the parents mated. In addition, breeding stock must be established in accordance with the provisions of CITES and relevant national laws, and in a manner not detrimental to the survival of the species in the wild. Breeding stock must also be maintained without the introduction of specimens from the wild, except for the occasional addition of animals, eggs, or gametes meeting certain requirements. The breeding stock must have produced offspring of second generation (F2) in a controlled environment or be able to demonstrate that it is capable of reliably producing second-generation offspring in a controlled environment. Resolution Conf. 12.10 (Rev. CoP15) defines the term ''bred in captivity for commercial purposes'' as ''any specimen of an animal bred to obtain economic benefit, including profit, whether in cash or kind where the purpose is directed toward sale, exchange, or provision of a service or any other form of economic use or benefit.'' Countries operating CITES-registered operations must ensure that the operation, ''will make a continuing meaningful contribution according to the conservation needs of the species'' (CITES 2007b, pp. 1–2). Under the exception in the Treaty and

Resolution Conf. 12.10 (Rev. CoP15), specimens of Appendix-I species originating from CITES-registered captive-breeding operations can be traded for commercial purposes, and shipments only need to be accompanied by an export permit issued by the exporting country. The importer is not required to obtain an import permit because these specimens are treated as CITES Appendix II. Countries that are Parties to CITES should restrict their imports of Appendix-I captive-bred specimens to those coming only from CITES-registered operations. Additional information on CITES-registered operations can be found on the CITES Web site at *http://www.cites.org/eng/resources/registers.shtml.*

Prior to the downlisting of the species in Mexico and Belize, three CITES-registered operations for Morelet's crocodiles were located in Mexico. These facilities, while no longer registered with the CITES Secretariat, are still in operation (CITES 2010a, p. 24, Annex 3). The names of these operations are:

(1) Cocodrilos Mexicanos (established in 1989; (former) registration number A–MX–501) in Culiacan, Sinaloa State. In 2008, this operation contained 28,673 captive Morelet's crocodiles for commercial production (CITES 2010a, p. 24, Annex 3).

(2) Industrias Moreletii (established in 1993; (former) registration number A–MX–502) in Villahermosa, Tabasco State. In 2008, this operation contained 1,237 captive Morelet's crocodiles for commercial production (CITES 2010a, p. 24, Annex 3).

(3) Cocodrilos de Chiapas (established in 1989; (former) registration number A–MX–503) in Tapachula, Chiapas State. In 2008, this operation contained six captive Morelet's crocodiles for exhibition purposes (CITES 2010a, p. 24, Annex 3).

When the CITES Appendix-II designation became effective on June 23, 2010, for Morelet's crocodiles in Mexico and Belize, commercial international trade in captive Morelet's crocodiles was no longer limited to crocodiles originating from the three operations that were registered with the CITES Secretariat. However, with the annotated listing, no export of wild-caught specimens for commercial purposes is allowed. Thus, any commercial export will continue to come from sources other than wild populations. There are currently 19 closed-cycle, captive-breeding operations registered with the Government of Mexico as UMAs for the production of Morelet's crocodile in Mexico. Under Mexican law, UMAs registered with the Government of Mexico must be closed-cycle and prove that they can produce individuals beyond the F2 generation (UMAs are described more fully below). Only 4 of the 19 UMAs have a captive population sufficiently large to support commercial trade, and only 2, Cocodrilos Mexicanos and Industrias Moreletii, of these 4 UMAs currently support international commercial trade() (CITES 2010a, Annex 3, p. 24). Importing Morelet's crocodiles from Mexican captive-breeding operations no longer requires a CITES import permit because a CITES import permit is not required for Appendix-II species. However, a CITES export permit or re-export certificate is still required. Although the two remaining UMAs capable of supporting trade (Cacahuatal in Veracruz State and Punta del Este in Campeche State) currently do not contain enough Morelet's crocodiles to support international commercial trade, they do have enough potential annual production to produce enough skins to support local commercial trade (CITES 2010a, Annex 3, p. 24).

Because the Morelet's crocodile in Guatemala is listed as an Appendix-I species under CITES, the only way that Morelet's crocodiles and their parts and products from Guatemala could legally be traded commercially in international trade is if a captive-breeding operation were to be registered with the CITES Secretariat. However, because Guatemala does not currently have any captive-breeding operations that are registered with the CITES Secretariat, the commercial international trade in Morelet's crocodile products from Guatemala remains restricted.

However, under the current listing of the species under the Act, it remains illegal to import Morelet's crocodiles or their parts or products into the United States, regardless of the source, unless the purpose of the import is for scientific research or enhancement of propagation or survival of the species. When this final rule is effective (see DATES above), the prohibitions of the Act are removed. Morelet's crocodile parts and products originating from sources other than wild populations from Mexico and Belize may be imported into the United States for commercial purposes, as long as the required CITES export permit or re-export certificate has been granted. As discussed earlier, however, an export permit will not be granted unless the exporting country finds that the export will not be detrimental to the species and the specimen was lawfully acquired.

Mexico's Proposal To Transfer the Morelet's Crocodile to CITES Appendix II

At the 2008 CITES Animals Committee meeting, the Government of Mexico submitted for comment and review a draft proposal to transfer Mexico's population of Morelet's crocodile from Appendix I to Appendix II based on Mexico's belief that the Morelet's crocodile no longer met the criteria for inclusion in Appendix I (CITES 2008a, pp. 1–28; CITES 2008a, p. 32). Committee members were generally favorable of the proposal, but had several technical questions and suggestions. The Government of Mexico subsequently revised their 2008 proposal and formally submitted a 2010 CITES proposal for consideration at CoP15, held in March 2010 in Doha, Qatar (Government of Mexico 2010). The 2010 proposal was to transfer the Morelet's crocodile throughout its range to Appendix II (CoP15 Prop. 8). The CITES Secretariat reviewed the proposal and agreed that the Morelet's crocodile no longer met the biological criteria for an Appendix-I species and recommended that the proposal be adopted.

The Government of Mexico's 2010 CITES proposal recommended transferring the Morelet's crocodile from Appendix I to Appendix II because the species no longer met the criteria for inclusion in Appendix I. Under the 2010 proposal, the transfer to Appendix II applied to all three range countries. The 2010 proposal included an annotation establishing a zero quota for wild specimens. The zero quota would prohibit any international trade in wild specimens within the context of CITES, thereby limiting the trade in Morelet's crocodile and its products to those originating from sources other than wild specimens. Although the Belize-Guatemala-Mexico Tri-national Strategy for the Conservation and Sustainable Use of Morelet's Crocodile (see the Post-delisting Monitoring section, below) includes long-term plans for ranching, none of the range countries have indicated they plan to ranch Morelet's crocodiles within the foreseeable future.

The Government of Mexico consulted with the Governments of Belize and Guatemala on their 2010 CITES proposal. The Government of Belize supported the proposal, but did not provide documents to the CITES Secretariat to indicate their official support. According to the Government of Mexico's 2010 CITES proposal, the Government of Guatemala supported the proposal in part, but recommended transferring only the Mexican

population of Morelet's crocodile in captive-breeding operations to Appendix II, with a zero quota for wild specimens traded for commercial purposes. In a letter from Guatemala's Consejo Nacional de Areas Protegidas to the Ambassador of Mexico dated 5 June 2009 (CITES 2010a, Annex 4, p. 25), the Government of Guatemala indicated that it did not support the Government of Mexico's 2010 CITES proposal as written. They recommended verifying that moving captive Morelet's crocodiles in Mexico to Appendix II would not put wild Morelet's crocodiles in Mexico at risk. They supported Mexico's transfer of captive-bred populations of Morelet's crocodiles from Appendix I to Appendix II provided the parties ensure the following:

- They verify that wild populations of Morelet's crocodiles in Mexico will not be at risk as they are moved from Appendix I to II;
- If Mexico's proposal at CoP15 is approved, then measures should be put in place for strict monitoring and enforcement on the Mexico-Guatemala border;
- That the marking of live animals be done by methods that cannot be falsified and that skins be tagged in accordance with CITES to maintain chain of custody;
- That the tagging methods for Mexican populations of Morelet's crocodile be widely circulated to range countries and those countries importing parts and products as well as live specimens.

Under Guatemala's recommended scenario, Morelet's crocodiles in Mexico and Belize would be in Appendix II, with a zero quota for wild specimens traded for commercial purposes, and all Morelet's crocodiles in Guatemala would remain on Appendix I (CITES 2010a, pp. 12, 25–26). The Appendix-II designation became effective on June 23, 2010. As a result, Morelet's crocodiles and their products from Mexico and Belize from sources other than wild populations are now allowed to enter international trade for commercial purposes under CITES. They are not, however, currently able to enter the United States market because the Act's prohibitions remain in effect. The international commercial trade in all *wild* Morelet's crocodiles remains restricted.

At this time, the Government of Mexico intends to export products derived from Morelet's crocodiles raised in its captive-breeding operations that are registered with the Government of Mexico as UMAs, and that have a proven track record of producing offspring beyond the F2 generation (CITES 2008, p. 23; CITES 2010a, p. 9).

Now that the Morelet's crocodile in Mexico and Belize is transferred to CITES Appendix II with an annotation providing a zero quota for wild specimens traded for commercial purposes, and when this delisting rule becomes effective (see **DATES,** above), live Morelet's crocodiles and parts and products originating from any captive-breeding operations in Mexico (and Belize, if any) may be imported into the United States. In addition, Morelet's crocodile products manufactured in other countries could also be re-exported into the United States if those skins originated in Mexico or Belize and were not derived from wild populations. Live Morelet's crocodiles and parts or products originating from Guatemala will remain in CITES Appendix I, with its associated trade restrictions remaining in place.

CITES National Legislation Project

Through Resolution Conf. 8.4 (Rev. CoP15), the Parties to CITES have adopted a process, the National Legislation Project, to evaluate whether Parties have adequate domestic legislation to successfully implement the Treaty. In reviewing a country's national legislation, the Secretariat considers whether a Party's domestic laws designate the responsible Scientific and Management authorities, prohibit trade in violation of the Convention, have penalty provisions in place for illegal trade, and provide for seizure of specimens that were illegally traded or possessed.

While both Guatemala and Mexico's legislation have been determined to be sufficient to properly implement the Treaty, Belize's national legislation was considered lacking. As part of the National Legislative Project, Belize has submitted a plan to revise their legislation to the Secretariat in March 2010, but as of the publication of this final rule, Belize has not officially enacted any revised legislation (CITES 2010e). Although a trade suspension was put in place for Belize for one orchid species, *Myrmecophila tibicinis,* the suspension was in relation to the *Review of Significant Trade in Specimens of Appendix II species* (CITES 2010d) and not due to Belize's current legislation implementing CITES. After the effective date of this final rule (see DATES, above), CITES will continue to protect the Morelet's crocodile throughout its range by regulating international trade.

All three countries also have protected-species and protected-areas legislation under the jurisdiction of specific ministries or departments. The three range countries have an extensive regulatory framework to control activities with respect to the Morelet's crocodile and its habitat. Mexico is unique among the three range countries in that the Government of Mexico also has legislation regulating captive-breeding operations.

Mexico

The Government of Mexico has a strict and comprehensive legal framework to regulate the conservation and sustainable use of the Morelet's crocodile in Mexico:

(1) *Ley General de Equilibrio Ecológico y Protección al Ambiente (LGEEPA; General Ecological Equilibrium and Environmental Protection Law)*—This is the primary Mexican law for environmental matters and is the principal legal instrument that regulates the Morelet's crocodile in Mexico (CONABIO 2005, Annex 3, p. 1). Passed in 1988, this law applies to and integrates the three levels of government within the context of natural resources: Federal, state, and municipal. With regard to trade in wildlife species, including the Morelet's crocodile, the LGEEPA contains the basis to regulate all activities, including importation, exportation, seizures, sustainable use, violations, fines, animal welfare, and legal possession. While 45 articles within the Mexican LGEEPA deal with environmental contamination (CONABIO 2005, Annex 3, p. 1), we are not aware of any specific provisions or their relevance to Morelet's crocodile.

(2) *Ley General de Vida Silvestre (LGVS: General Wildlife Law)*— Passed in 2000, this law regulates the use, conservation, and management of domestic wild fauna and flora and their habitat (CONABIO 2005, Annex 3, pp. 1–2). This law is based on the principle of sustainable use. Any activity with regard to wild fauna and flora must comply with certain requirements: The activity must be supported by an approved management plan; the quantity to be harvested must be less than natural recruitment (replacement); and the harvest must not have negative impacts on the wild populations, their habitat, or biological activities. With regard to the Morelet's crocodile, harvest of wild populations is not permitted, and harvest under this law would only be permitted for specimens obtained through closed-cycle, captive-breeding operations that have programs that contribute to the development of wild populations (CITES 2010a, p. 9).

According to the LGVS, alien specimens or populations are those occurring outside their natural range

(such as the Morelet's crocodiles found on the Pacific coast of Mexico), including hybrids. Such specimens or populations can only be managed in captivity, and with prior approval. A management plan must be in place with established security and contingency measures to avoid any negative effects on the conservation of wild native specimens and populations or their habitat. LGVS establishes management, control, and remediation measures for individuals or populations considered harmful. Measures may consist of capture/collection for the development of recovery, restocking, and reintroduction projects; for research or environmental education activities; for relocation of specimens (subject to prior evaluation of the destination habitat and condition of the individuals); for elimination or eradication of individuals/populations; or of actions or devices to keep the individuals away, disperse them, make access difficult, or reduce the damage they cause (CITES 2010a, p. 9).

(3) *Programa de Conservación de la Vida Silvestre y Diversificación Productiva en el Sector Rural (Program for Wildlife Conservation and Productive Diversification of the Rural Sector)*—Launched in 2000, this program defines the conceptual, strategic, legal, and administrative framework that governs any initiative for the conservation and use of wild species (CITES 2010a, p. 8). The goal of this program is to establish incentives for private and public initiatives that favor natural resources conservation, as well as provide economic opportunities for private entities for the sustainable use of these resources (CONABIO 2005, Annex 3, pp. 2–3). Based on a biological evaluation of the species, this program promotes the use and conservation of priority species of plants and animals, including the establishment of wildlife production units and technical advisory committees such as the COMACROM (Subcomité Técnico Consultivo para la Conservación, Manejo y Aprovechamiento Sustentable de los Crocodylia en México; Technical Advisory Subcommittee for the Conservation, Management, and Sustainable Use of the Crocodilians in Mexico) in the case of the Morelet's crocodile. Created by the Government of Mexico in 1999, COMACROM includes scientists, technicians, NGOs, producers, authorities, and other stakeholders. It participates in meetings of the IUCN Crocodile Specialist Group (CSG) and contributes publications to the CSG (CITES 2010a, p. 8).

(4) *Norma Oficial Mexicana NOM–059–SEMARNAT–2001*—Passed in 2001, this regulation provides legal protection to domestic endangered species of fauna and flora, and provides a mechanism to evaluate extinction risks (CONABIO 2005, Annex 3, p. 3). The Método de Evaluación de Riesgo de Extinción de Especies Silvestres de México (MER; Method to Evaluate Wildlife Extinction Risks in Mexico), one of the parts of this regulation, has four categories of risk: Probably extinct in the wild, in peril, threatened, and subject to special protection. The Morelet's crocodile is included in the category ''subject to special protection.'' This regulation defines the category ''subject to special protection'' as ''those species or populations that might find themselves threatened by factors that adversely affect their viability, thus determining the need to promote conservation or recovery and the recovery and conservation of associated species populations. (This category may include lower risk categories of the IUCN classification).''

Although the Government of Mexico no longer classifies the Morelet's crocodile as ''endangered'' or ''threatened,'' classification as ''subject to special protection'' under Mexican Official Law NOM–059–SEMARNAT–2001 allows legal protection at the national level (CITES 2010a, p. 9). Including the Morelet's crocodile in this category allows the Government of Mexico to make sure it still meets the conservation needs of important species from both a biologically and socioeconomic standpoint before the species can be considered to be endangered or threatened. CONABIO recommended keeping the Morelet's crocodile in this category of ''subject to special protection'' to maintain existing measures of conservation, technical supervision, monitoring and enforcement in order to avoid the species' having a higher risk category in the future (CONABIO 2005, p. 4 and Annex 2, p. 5).

(5) *Norma Oficial Mexicana NOM–126–SEMARNAT–2000*—Passed in 2000, this regulation oversees scientific research and collection by individual domestic and foreign researchers, as well as by institutions (CONABIO 2005, Annex 3, p. 3). If a species is also regulated under CITES, the appropriate permit or certificate must be obtained under this regulation. Scientific research or collections involving the Morelet's crocodile are regulated under these provisions.

(6) *Sistema de Unidades de Manejo para la Conservación de la Vida Silvestre (SUMA; Wildlife Conservation Management and Administration Unit System)*—In 1997, the Government of Mexico established a system for registering, supervising, and enforcing UMAs (Unidad de Manejo y Administración; Conservation Management and Administrative Units) for intensive reproduction of economically valuable natural resources, including captive farming of Morelet's crocodiles (CONABIO 2005, Annex 3, pp. 3–5). The goal of this regulation was to ensure that biodiversity conservation be considered within the context of the production and socioeconomic needs of the country. This system combined a broad range of entities or facilities (''units'') under a single administrative program, including zoological and botanical gardens, greenhouses, and animal breeding centers. Through these units, the Government of Mexico promotes natural resources uses that are responsible and planned. Extensive and intensive captive-breeding units for the Morelet's crocodile are covered under this system. In exchange for the right to harvest the Morelet's crocodile under controlled conditions, closed-cycle, captive-breeding unit operators are required to develop and implement an approved management plan for the site, as well as to conserve the species' habitat and other species that use that habitat. Strict animal husbandry practices and welfare considerations are required under these plans.

Legal registration of approved UMAs requires proof of captive production beyond the F2 generation (CITES 2010a, p. 9). For intensive UMAs, such as captive-breeding operations in Mexico, the Government of Mexico requires the UMAs to submit regular reports that must include information on births and deaths, number and identification of traded specimens, and management activities (CITES 2010a, p. 10).

The Government of Mexico uses three methods to mark live Morelet's crocodiles registered with the Wildlife Division through the corresponding inventories of UMAs. The first method is interdigital staples on the feet. The second method is the traditional method of cutting notches in the tail scales and is only used by some operations (CITES 2010a, p. 10). These marks are registered with the Government of Mexico. The third method is the Universal Tagging System required by CITES for the export of skins (Resolution Conf. 11.12 (Rev. CoP15)), which consists of a plastic security tag with the UMA registration number, the species code, a serial number, and the year of production or harvest. Any application for a CITES export permit must include the number of the authorized specimen based on the interdigital tag and the skin's plastic

security tag, and is used to track skins and other products (CITES 2010a, p. 10).

Approximately 50 UMAs have been registered for rearing Morelet's crocodiles in Mexico since the 1980s, primarily for domestic commerce. Nineteen of them are still actively managing the species, and 3 were registered with the CITES Secretariat when the species in Mexico was included in Appendix I (CITES 2010a, p. 11). Only 5 of the 19 UMAs have the potential for annual commercial production of products made from Morelet's crocodile (CITES 2010a, p. 24).

(7) *Sistema Nacional de Áreas Naturales Protegidas (SINANP; National System of Protected Natural Areas)*—Passed in 2000, this system is made up of parcels identified as Protected Natural Areas (CONABIO 2005, Annex 3, p. 5). These Protected Natural Areas are created by Presidential decree and the activities on them are regulated under the LGEEPA, which requires that the Protected Natural Areas receive special protection for conservation, restoration, and development activities. The National Commission of Natural Protected Areas (CONANP), a decentralized organ of the Government of Mexico's Ministry of Environment and Natural Resources (SEMARNAT), currently administers 173 federal natural areas representing more than 62,396,392 ac (25,250,963 ha). These natural areas are categorized as: Biosphere Reserves, National Parks, Natural Monuments, Areas of Natural Resource Protection, Areas of Protection of Flora and Fauna, and Sanctuaries.

These areas are protected under Mexican law because they contain key or representative ecosystems or species, or ecosystems or species that are at risk and require strict control. Many ecosystems or species, including the Morelet's crocodile, are protected under this system. According to the Government of Mexico, SINANP includes at least 12 protected areas occupied by Morelet's crocodile, covering an estimated 13 percent of the species' geographic range (CONABIO 2005, p. 30).

(8) *Código Penal Federal (Federal Penal Code)*—The code contains a special section for environmental crimes (CONABIO 2005, Annex 3, pp. 5–6). These penalties apply to those who commit crimes against plants or animals, as well as to individuals who illegally use or commercialize regulated species without authorization. These penalties apply to crimes involving the Morelet's crocodile.

In order to implement and enforce the laws and regulations mentioned above, SEMARNAT created the office of the Procuraduría Federal de Protección al Ambiente (PROFEPA; Federal Prosecutor for Environmental Protection) and the Programa para la Inspección y Vigilancia en Puertos, Aeropuertos y Fronteras (Ports, Airports, and Borders Inspection and Enforcement Program) (CONABIO 2005, Annex 3, p. 6). Under this program, imports and exports for key products regulated by SEMARNAT are inspected at 65 points of entry and exit to prevent laundering. Morelet's crocodile products are regulated under this program. PROFEPA implements the Environmental Inspection Program at ports, airports, and borders, as well as the Wildlife Inspection Program, which monitors all stages of the use of wild species and ensures their protection. Inspection and enforcement programs make these Mexican laws and regulations more effective, especially at airports and border ports of entry and exit. Specific actions include the verification of cross-border movements in compliance with CITES and other international agreements in coordination with customs authorities; inspection of areas of wildlife harvest, stockpiling, distribution, and sale; surveillance of areas of wildlife distribution and harvest; and special operations in areas of wildlife harvest, stockpiling, distribution and sale, in coordination with public law enforcement and judicial authorities (Govt. of Mexico 2010, p. 11). Mexico has implemented several programs to prevent and combat illegal harvest, including the System of Wildlife Management Units (SUMA) which is based on six key elements: (1) Registration with the Wildlife Division (DGVS Dirección General de Vida Silvestre—SEMARNAT, CITES Management Authority); (2) proper habitat management; (3) monitoring of wild populations of the species harvested; (4) controlled harvest (including periodic reports and inventories on each UMA); (5) management plan approved and registered with the Wildlife Division; and (6) certificate of production and market/tagging methods. SEMARNAT conducts random inspections of UMAs and, if any issues are detected in the management plan, carries out population studies, including sampling activities and species inventories, and producing periodic reports on these findings (CITES 2010a, p. 10).

We do not have any information on whether the Mexican legal framework specifically authorizes subsistence hunting or cultural use of the Morelet's crocodile, or on the current level of enforcement, or whether the enforcement is considered adequate.

Belize

The Government of Belize also has a legal framework that regulates the conservation and sustainable use of the Morelet's crocodile, along with other species of birds, mammals, and reptiles (collectively known as Scheduled species). In general terms, the Wildlife Protection Act prohibits illegal harvest and export in Belize (Government of Belize 2000 pp. 7–9). The Forestry Department, within the Ministry of Natural Resources and the Environment, is the relevant government agency with respect to the Morelet's crocodile. Under this legislation, the Game Warden controls hunting of these species. Certain activities are prohibited, and a license is required. For example, hunting of the Morelet's crocodile is prohibited. Importation and exportation of wildlife is subject to strict protocols and provisions of the Wildlife Protection Act and requires a permit. Hunting of certain species for scientific or educational purposes also requires a permit. The legislation also identifies offenses and penalties.

In addition to the Wildlife Protection Act, the Government of Belize is in the process of developing and implementing a National List of Critical Species (Meerman 2005a, pp. 1–8; Meerman 2005b, p. 38). This list is based, in part, on the procedures used by IUCN Red List of Threatened Animals (see IUCN 2001, version 3.1, 35 pp.). Within the context of the Belize Protected Areas Policy and System Plan, this list will serve as a basis for the Belize Red Data List. According to the 2005 list (Meerman 2005a, p. 8), the Morelet's crocodile is categorized as ''CD'' (Conservation Dependent) in Belize due to the following factors: small range, hunted, economic importance, charismatic species drawing national and international attention, and persecuted as perceived pest. Under the 2005 list, Conservation Dependent species are taxa that are the focus of a continuing taxon-specific or habitat-specific conservation program for the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories on the list within 5 years (Meerman 2005a, p. 3).

These laws and regulations provide legal protection to the Morelet's crocodile in Belize. We have no information on whether the Wildlife Protection Act is sufficiently enforced. The CITES Legislation Project (CITES 2010e) concluded that Belize's national

legislation does not meet any of the requirements for implementing CITES. However, Belize has submitted a plan and draft legislation to CITES as of March 2010, but has not officially enacted the legislation. In spite of this assessment by CITES, trade data seem to indicate the threat of unregulated trade from Belize is minimal.

Guatemala

The Government of Guatemala also has a legal framework that regulates the conservation and sustainable use of natural resources, including the Morelet's crocodile (IIA URL FCAA IARNA 2003, pp. 67–69; IARNA URL IIA 2006, pp. 104–107; República de Guatemala 2007, pp. 3–4, 31). In general terms, and based on our review of other materials, natural resources management is under the jurisdiction of the Ministerio de Ambiente y Recursos Naturales (Ministry of the Environment and Natural Resources; USAID 2002, pp. 44–45; República de Guatemala 2007, pp. 3–4, 9). The main legislation in this regard is Decreto Número 4–89 (*Ley de Áreas Protegidas,* Gobierno de Guatemala 1989, pp. 1–24; Birner *et al.* 2005, p. 290; *Law of Protected Areas and Amendments/Revisions*). This decree established the Comisión Nacional de Áreas Protegidas (CONAP; National Commission on Protected Areas). CONAP has been tasked to run the Sistema Nacional de Áreas Protegidas (SIGAP; National System of Protected Areas; IARNA URL IIA 2006, pp. 104–107). In Guatemala, the Morelet's crocodile is included in the Endangered Species List (Resolution No. ALC/032–99 of CONAP) in Category 2, ''Seriously Endangered,'' which includes species that are endangered because of habitat loss, trade, the very small size of their populations, and/or endemism with limited distribution (CITES 2010a, p. 9).

In the past, threats to the Morelet's crocodile and its habitat in Guatemala, compounded with the lack of funding and personnel, made it difficult for the Government of Guatemala to adequately enforce these laws and regulations. Ongoing conservation actions were often overwhelmed by slow economic development, high levels of poverty, unequal land distribution, a highly segmented society, and the effects of more than 3 decades of civil war (Birner *et al.* 2005, pp. 285, 292). In 2003, Laguna del Tigre National Park was considered by ParkWatch as critically threatened due to drug trade, land grabs, the presence of human settlements, expanding agriculture and cattle ranching, poaching, forest fires, the oil industry, and an almost complete lack of institutional control over the area (ParksWatch 2003, pp. 1, 11). However, in 2004, ParksWatch stated that the staff at Laguna del Tigre had doubled in size since their 2003 report (ParksWatch 2004, p, 30.) Seventy-three park rangers, 10 archeological site guards, and 96 Army personnel were hired to staff the park, and since the increase in staffing, both the park and the biotope are ''constantly patrolled.'' In addition, the Wildlife Conservation Society and USAID continued its ''Biodiversity Conservation at a Landscape Scale'' program and have provided a comprehensive plan with specific goals to preserve and protect wildlife in the Maya Biosphere Reserve (MBR) in Guatemala through conserving wildlife species and their habitat, while maintaining the economic productivity of renewable natural resources. They are fulfilling these goals by establishing specific parameters: ''to develop adaptive and participatory strategy to reduce threats to wildlife in the MBR; to develop, implement, and monitor sustainable mechanisms to reduce threats to wildlife and ecosystems across the MBR landscape; to learn and teach best management practices for the conservation of the MBR and beyond; and to guide, design, and test wildlife-focused planning'' (WCS 2008, p. 3). For the past 9 years, the WCS has been conducting over-flights of Laguna del Tigre National Park with the Guatemalan National Park Service and LightHawk, a volunteer-based environmental aviation organization, and has used that information to identify illegal colonization, resulting in successfully removing illegal squatters (80+ families) from the area. In addition, over-flights revealed marijuana clearings on the eastern-most port of Mirador-Río Azule National Park in 2007. WCS over-flights helped to monitor fires, locate illegal settlements, and notify the national and provincial government as well as the national media of illegal activities. As a result, the presence of fires in Laguna del Tigre National Park has been reduced by 90 percent. In addition, WCS has taken an active role in educating locals and concessionaires on best management practices for sustainable use of forest products (WCS 10 year report, no date given, p. 6).

In August 2010, the president of Guatemala announced that he was deploying 250 soldiers to recover fully all the protected zones of El Petén in the Laguna del Tigre section of the MBR. This ''Green Battalion'' was deployed specifically to protect the Laguna del Tigre National Park and work jointly with the National Civil Police and the Attorney General's Office to combat drug trafficking and the illegal harvest of natural resources and archaeological sites of that region of the MBR (Latin American Herald Tribune, December 6, 2010).

The Government of Guatemala is also participating in the Tri-national Strategy (see the Post-delisting Monitoring section below) for Morelet's crocodile, wherein specific actions directed toward the Morelet's crocodile are defined. Conservation actions in Guatemala are being developed and implemented within the context of the Convention on Biological Diversity and the National Biodiversity Strategy and Action Plan (Birner *et al.* 2005, p. 285). Many outstanding accomplishments have been achieved in Guatemala in terms of biodiversity conservation (IARNA URL IIA 2006, p. 22), and the Guatemalan government seems committed to ensuring that environmental management and enforcement efforts continue.

Summary of Factor D

Based on the fact that all three range countries are Parties to CITES, have protected-species and protected-areas legislation, implemented that legislation, and enforce relevant laws, the current regulatory mechanisms appear to be adequate to conserve the Morelet's crocodile in the majority of the species' range. As per the CITES National Legislation Project (CITES 2010e), both Guatemala and Mexico's legislation meet all the requirements for implementing CITES. Belize's national legislation was considered not to meet any of the requirements for implementing CITES. However, Belize has submitted a plan and draft legislation to CITES as of March 2010, but has not officially enacted the legislation. Per decisions made during CoP15, the CITES protections for Morelet's crocodiles in Guatemala will remain unchanged. They will remain protected as an Appendix-I species, with those CITES trade restrictions remaining in place.

Together, Mexico and Belize contain the majority of wild individuals (87 percent) and the estimated potentially suitable habitat (81 percent) throughout the species' range. We anticipate that these conditions will remain essentially the same, both domestically and internationally, in the foreseeable future. However, we did not solely rely on these future measures in finding the species is no longer endangered or threatened.

Existing regulatory mechanisms, including CITES and domestic prohibitions on harvest of wild

Morelet's crocodiles, have played a vital role in the resurgence of Morelet's crocodiles over the last 40 years. While some trade restrictions could be lifted in the future, particularly to allow increased trade in captive-bred specimens now that Morelet's crocodiles in Mexico and Belize have been moved to CITES Appendix II with a zero export quota for wild specimens traded for commercial purposes, we believe such lifting of restrictions would pose little risk to the species. All three range countries restrict the use of wild specimens, and the Government of Mexico has institutions with proven track records to administer and enforce controls on captive-breeding operations and laundering of illegal specimens. Should the zero export quota for wild specimens traded for commercial purposes be lifted, it may create greater enforcement challenges in all three range countries in the foreseeable future because the taking of wild Morelet's crocodiles could be authorized. If this happens, the requirements of CITES Appendix II will apply. The exporting country will be required to determine that the export is not detrimental to the survival of the species in the wild and specimens are legally acquired prior to issuing a permit authorizing the export. However, a change to the annotation would require approval of two-thirds of the Parties voting at a CoP and cannot be achieved unilaterally by any of the range countries. Therefore, we do not have any indication that CITES and the regulatory mechanisms of the range countries will be inadequate to continue to protect the species in the wild when this delisting rule becomes effective, or if ranching or wild harvest are authorized in the future.

The reproduction and survival rates of wild Morelet's crocodiles are currently robust. Populations remain stable throughout most of their range, and have expanded their range in some areas. In conclusion, we find that, taken together, the currently existing protections described above are adequate, and they will remain adequate to protect the Morelet's crocodile and its habitat in the majority of its range now and within the foreseeable future.

Factor E. Other Natural or Manmade Factors Affecting the Continued Existence of the Species

Human-Crocodile Conflicts

The Morelet's crocodile is known to attack humans. While data about these conflicts are limited, anecdotal reports suggest that these conflicts are widespread and ongoing. In a well-documented attack in Belize in August 2001, a Morelet's crocodile attacked a 13-year-old male and caused him to drown in the Belama area of Belize City (Finger *et al.* 2002, p. 198).

More often, human-crocodile conflicts involving the Morelet's crocodile are more benign. In Mexico, for example, the Crocodile Museum (Chiapas State; about 80 cases per year) assists local officials through the capture, rescue, and relocation of local crocodilians (all three species, including the Morelet's crocodile) that are considered potentially dangerous or, because of their location (close proximity to human activities), they might be killed by local inhabitants (Domínguez-Laso 2008, p. 5). Abercrombie *et al.* (1982, p. 19) reported that the Morelet's crocodile was generally feared in Belize. Finger *et al.* (2002, p. 199) indicated that development related to human occupation (such as residential areas and infrastructure) in Morelet's crocodile habitat around Belize City was generating increasing numbers of human-crocodile conflicts. Windsor *et al.* (2002, p. 418) also noted that the practice of feeding the Morelet's crocodile by residents and tourists was becoming more common and was also generating increasing numbers of human-crocodile conflicts in Belize. According to Platt and Thorbjarnarson (2000a, p. 27), large Morelet's crocodiles, despite legal protections, are still perceived as threats to humans and livestock, and are occasionally killed near residential areas in Belize. While educational programs are needed for local residents and visitors to deter this activity, it may also be necessary to develop a problem crocodile removal program to resolve these conflicts (Windsor *et al.* 2002, p. 418). No information was available about human-crocodile conflicts in Guatemala. Although human-crocodile conflicts are affecting local populations of Morelet's crocodiles, and this is likely to continue in the foreseeable future, we do not have any evidence that it is currently or anticipated to be a threat to the species as a whole.

Environmental Contaminants

Environmental contaminants are known to have negative impacts on terrestrial vertebrates (Smith *et al.* 2007, p. 41), including crocodilians (Ross 1998, p. 3). The primary routes through which terrestrial reptiles, including the Morelet's crocodile, are exposed to environmental pollutants are ingestion of contaminated prey, dermal contact, maternal transfer, and accumulation of chemicals into eggs from contaminated nesting media (Smith *et al.* 2007, p. 48). With regard to the Morelet's crocodile, organochlorine contaminants have been detected in the scutes (external scales) (DeBusk 2001, pp. viii–ix) and the chorioallantoic membrane (CAM) of hatched Morelet's crocodile eggs (Pepper *et al.* 2004, pp. 493, 495), as well as in whole contents analysis of nonviable crocodile eggs (Wu *et al.* 2000a, p. 6,416; 2000b, p. 671; Wu *et al.* 2006, p. 151).

The most common organochlorine found in studies of Morelet's crocodile in Belize was DDE (dichlorodiphenyldichloroethylene), detected in 100 percent of eggs collected by Wu *et al.* (2000b, p. 673) and 69 percent of CAMs sampled by Pepper *et al.* (2004, p. 495). Organochlorines have also been detected at additional sites throughout coastal Belize and the interior highlands (Meerman 2006a, p. 26; Wu *et al.* 2006, p. 153). Although exposure to organochlorines has been linked to adverse effects on population health of the American alligator in Florida (several studies cited by Wu *et al.* 2000b, p. 676), no population-level effects were detected in Belize (McMurry and Anderson 2000, pp. 1, 4; Wu *et al.* 2000b, p. 676). Rainwater (2003, pp. xii, 38), however, later suggested that some of the sites that had been chosen for comparative purposes in fact had similar contaminant profiles and that some study results suggesting no significant differences between sites may be equivocal.

Reproductive impairment due to endocrine-disrupting contaminants has been demonstrated elsewhere in crocodilians and is suspected to occur with Morelet's crocodiles in Belize due to known contaminant levels (Selcer *et al.* 2006, p. 50; Rainwater *et al.* 2008, p. 101). Initial results have not documented contaminant-induced vitellogenin in blood plasma in the Morelet's crocodile, but this condition may occur in the wild in Belize; studies are ongoing (Selcer *et al.* 2006, p. 50; Rainwater *et al.* 2008, pp. 101, 106–107).

Mercury was detected in nonviable Morelet's crocodile eggs collected from eight nests across three localities in northern Belize in 1995 (Rainwater *et al.* 2002a, p. 320; Rainwater *et al.* 2002b, p. 190). While mercury was detected in all eggs sampled, the mean concentration per egg was among the lowest reported values for any crocodile species. No overt signs of mercury toxicity or evidence of a population decline was noted for Morelet's crocodiles at the site (Rainwater *et al.* 2002a, pp. 321–322).

All samples for studies of organochlorine and mercury contaminants cited above came from Belize, and we are not aware of any

similar investigations elsewhere in the Morelet's crocodile range (Mexico or Guatemala). As reproduction and survival rates of Morelet's crocodiles are currently robust, we do not have any reason to believe that environmental contaminants are currently likely to cause the Morelet's crocodile to become in danger of extinction within the foreseeable future.

Populations currently remain stable throughout most of the species range, and have even expanded their range in some areas. This provides empirical evidence of the species' intrinsic resilience and adaptability. There is no evidence that environmental contaminants currently pose a threat to the species. Although environmental contaminants may represent a potential threat, especially given the potential for long-term bioaccumulation of contaminants during the species' long reproductive life, given this species' resiliency we do not have any data to indicate that they are likely to become a threat in the foreseeable future.

Manmade factors that could affect the continued existence of the Morelet's crocodile, according to CONABIO (CONABIO 2005, p. 32), were the construction and operation of oil extraction infrastructure and thermoelectric plants. The operation of chemical and manufacturing industries could also become a threat if potentially toxic residual materials are disposed of improperly. These activities, however, are highly regulated by the Ley General de Equilibrio Ecológico y Protección al Ambiente (LGEEPA; General Ecological Equilibrium and Environmental Protection Law) and the Attorney General for the Protection of the Environment (PROFEPA). Under LGEEPA, every new project has to fulfill strict protocols for the assessment of environmental impacts before it can be approved.

As discussed above in the Factor D., Inadequacy of Existing Regulatory Mechanisms, section, the Government of Guatemala opposed the Government of Mexico's 2010 CITES proposal based, in part, on threats to the species from pollution in Guatemala (CITES 2010a, p. 6). However, we do not have any information or data on the extent of the impact, if any, that pollution may have on the Morelet's crocodile in Guatemala.

Genetic Diversity and Integrity

At least three factors have been identified as potential threats with respect to the Morelet's crocodile: (1) Genetic heterogeneity; (2) hybridization; and (3) male-biased sex ratios.

Genetic Heterogeneity

Evaluation of nine microsatellite loci (highly repetitive DNA sequences) from Morelet's crocodiles in Belize suggested a high degree of genetic heterogeneity within local populations, relatively high levels of migration among populations, and no evidence of a major genetic bottleneck due to population depletion in the mid-1900s (Dever and Densmore 2001, pp. 543–544; Dever *et al.* 2002, p. 1084). Population bottlenecks are a period when a species population drops to such a low level that many genetic lineages become extinct and genetic variation is reduced to a few individuals, resulting in genetic homogeneity. If severe, it can lead to inbreeding. Endangered species that do not become extinct might expand their populations, but with limited genetic diversity, they may not be able to adapt to changing environmental conditions. The high degree of genetic heterogeneity found in Morelet's crocodiles was attributed to frequent migration by individuals among the several adjacent Morelet's crocodile populations. Ray *et al.* (2004, pp. 455–457) found low levels of genetic diversity in the mitochondrial control region of Morelet's crocodiles at 10 sites in northern Belize and at one site each in northern Guatemala and Mexico, but these results were inconsistent with a population bottleneck and may be typical of crocodilian populations. Other studies of the repetitive sequences in the mitochondrial control are ongoing in the Morelet's crocodile and may be a useful tool for researchers investigating population dynamics of this species (Ray and Densmore 2003, p. 1012).

Hybridization

Data suggest that some hybridization between Morelet's crocodiles and American crocodiles has always periodically occurred in the wild in areas where both species are sympatric, and that the hybridization is more frequent than previously believed (Cedeño-Vázquez *et al.,* 2008, pp. 666–667; Rodríguez *et al.* 2008, p. 678). In fact, Ross (2011, pers. comm.) states that ''evidence suggests that hybridization is a long standing, quite natural situation, and likely a stable hybrid zone of the sort described for many other species. While it is of considerable scientific and evolutionary interest, it does not constitute a threat to the species in its present form.''

While the first hybrids were identified in coastal areas of eastern Belize, later studies also located hybrids in Mexico along the eastern and northern coasts of the Yucatan Peninsula (Ray *et al.* 2004, p. 449; Cedeño-Vázquez *et al.* 2008, p. 661; Rodríguez *et al.* 2008, p. 674).

Hybridization involves several key issues. First, hybridization appears to be bidirectional (males of one species with females of the other species, and vice versa). In addition, hybrids (confirmed by laboratory tests) do not always exhibit physical characteristics (such as body size, shape, or coloration) that are a mixture of both species, and they are not always readily identifiable as such in the hand. Furthermore, F2 hybrids and backcrosses of hybrids to nonhybrids have been reported. These circumstances hinder the field identification of potential hybrids.

Ray *et al.* (2004, p. 459) stated that further assessment of genetic contact between these two species should precede reclassification of Morelet's crocodile under CITES, presumably because of uncertainty regarding numbers of genetically pure individuals in Belize. While populations of both the Morelet's crocodile and the American crocodile suffered from the hunting pressures of the 1950s and 1960s, the American crocodile has been slower to recover. Indeed, Ray *et al.* (2004, p. 459) noted that hybridization likely represents a greater danger to the genetic integrity of the larger but rarer American crocodile than to the Morelet's crocodile in Belize. The Service believes this concern bears additional investigation, but is not sufficient to warrant continued endangered or threatened status under the Act for the Morelet's crocodile.

One hypothetical concern about hybridization is that supplementation of wild Morelet's crocodile populations in Mexico with captive-bred crocodiles might affect the genetic integrity of wild populations. While analyses of captive-bred populations have not been published, differences in the nature and extent of genetic variation of these populations compared with wild populations might be expected. It is not clear if these differences, if they occur, would be significant or important from a conservation standpoint. Furthermore, this issue may be a moot point. Although agreements between captive-breeding operations and the Government of Mexico require breeders to make available up to 10 percent of their offspring for reintroduction to the wild, or as breeding stock for other crocodile farms in the country, no releases of captive-bred stock have occurred (Mexico 2006, p. 28). No releases have occurred because the current total population sizes of wild populations in Mexico, according to Mexican officials, are sufficiently large to render releases unnecessary (CITES

2008, p. 23). However, accidental escapes and deliberate releases of the Morelet's crocodile from captive-rearing units outside of the species' natural range have occurred in wetland habitats along the Pacific coast of Mexico. These wetland habitats are already occupied by the naturally occurring American crocodile, and interactions between the two crocodile species are likely (Ross 1995, p. 14). These escapes and releases of Morelet's crocodiles may pose risks to the genetic integrity of naturally occurring American crocodiles, but probably not to Morelet's crocodiles. The Government of Mexico is making efforts to diagnose potential threats to the native American crocodile caused by hybridization with the introduced Morelet's crocodile on the Pacific coast of Mexico. The goal of these efforts is to generate morphological and molecular identification materials and study the population dynamics of the American crocodile. The efforts will include monitoring and harvest of Morelet's crocodiles and hybrids for scientific research (CITES 2010a, p. 6).

Although hybridization between American and Morelet's crocodiles continues to affect some local populations of the Morelet's crocodile, the impacts appear to be very small. We have no evidence that hybridization is currently or anticipated to significantly affect the Morelet's crocodile throughout its range.

Male-Biased Sex Ratios

Another potential risk from supplementation of wild populations with captive-bred Morelet's crocodiles is that of skewed sex ratios (greater proportion of males in captive populations). Incubation temperature affects the sex ratio of crocodilian species differently (Escobedo-Galván 2006, p. 131). Like many crocodilian species, the Morelet's crocodile exhibits temperature-dependent sex determination. Incubation temperatures greater than about 93 °F (34 °C) or less than 90 °F (32 °C) produce females, while temperatures between 90–93 °F (32–34 °C) generally produce males (Escobedo-Galván 2006, p. 133; Escobedo-Galván *et al.* 2008, p. 2). Some wild populations of the Morelet's crocodile in Belize also have greater proportions of males than females (5.3 males per 1 female), but seem to be healthy (Platt and Thorbjarnarson 2000a, p. 23). We do not have any evidence that skewed sex ratios currently pose a threat to the species. Although skewed sex ratios may represent a potential threat, especially given the potential for skewed sex ratios as a result of climate change, this information is not sufficient to be able to judge the timing of this potential, i.e., that it will manifest within the foreseeable future. Therefore, we do not have any information to indicate that it is likely to become a threat in the foreseeable future.

Natural Weather Events

Natural weather can affect the Morelet's crocodile. Hurricanes or heavy seasonal rains, for example, may pose risks to Morelet's crocodile eggs located in nests along water channels. Flooding associated with hurricanes or rains, however, may also provide conservation benefits to the Morelet's crocodile by facilitating movements of individuals across the landscape, thereby promoting gene flow (CITES 2010a, p. 6). Furthermore, extended dry periods can result in the temporary disappearance of ephemeral water bodies, with concomitant increases in Morelet's crocodile densities and intraspecific interactions at nearby sites that still have water. There is no evidence, however, that natural weather conditions have been a problem for the Morelet's crocodile, which has adapted to these weather conditions. Therefore, we have no reason to believe that natural weather events are currently likely to cause the Morelet's crocodile to become in danger of extinction within the foreseeable future throughout all or any significant portion of its range.

Climate Change

The Intergovernmental Panel on Climate Change (IPCC) concluded that warming of the climate system is unequivocal (IPCC 2007a, p. 30) and sea levels are expected to rise well into the foreseeable future (Bates *et al.* 2008, pp. 20, 28–29). Numerous long-term changes have been observed including changes in arctic temperatures and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns, and aspects of extreme weather including droughts, heavy precipitation, heat waves, and the intensity of tropical cyclones (IPCC 2007b, p. 7). Based on scenarios that do not assume explicit climate policies to reduce greenhouse gas emissions, global average temperature is projected to rise by 2–11.5 °F by the end of this century (relative to the 1980–1999 time period) (USGCRP 2011, p. 9). Species that are dependent on specialized habitat types, limited in distribution, or occurring already at the extreme periphery of their range will be most susceptible to the impacts of climate change. While continued change is certain, the magnitude and rate of change is unknown in many cases.

The information currently available on the effects of climate change and the available climate change models do not make sufficiently accurate estimates of location and magnitude of effects at a scale small enough to apply to the range of the Morelet's crocodile. We do not have any information on the projected impacts to the Morelet's crocodile because of climate change, particularly the potential impacts of shifting global temperatures on sex ratios. The study by Escobedo-Galván *et al.* (2008) regarding climate change's projected impacts to the American crocodile illustrates the possible impacts to the Morelet's crocodile. This study, entitled ''Potential effects of climate change on the sex ratio of crocodiles'' (Escobedo-Galván *et al.* 2008), was presented at the February 2008 International Science Symposium: Climate Change and Diversity in the Americas. The study selected several areas in Florida and western Mexico that contain American crocodiles, and used the current environmental information for these areas to predict how increased temperatures would affect the potential geographical distribution and sex ratios of the species in Florida, the Caribbean, and Central America.

Based on a preliminary analysis (focusing on the geographic distribution and sex ratios of American crocodiles in the present, 2020, and 2050), Escobedo-Galván *et al.* (2008) postulated that the geographic distribution and sex ratios of American crocodile populations in different parts of the range would change in response to temperature and sea-level parameters. Crocodiles are ectothermic, relying on external sources of heat to regulate their body temperature. They control their body temperature by basking in the sun, or moving to areas with warmer or cooler air or water temperatures. Optimal growth in crocodilians has been found to occur around 88 °F (31 °C), with appetites and effective digestion diminishing below 84 °F (29 °C) (Brien *et al.* 2007, p. 15). As global temperatures increase, areas that are currently too cool to support American and Morelet's crocodiles may become warm enough to support them in the future. According to Escobedo-Galván *et al.* 2008, increased global temperatures and sea level would benefit the American crocodile by significantly increasing its potential habitat and distribution. Their study predicted that the current potential distribution for the American crocodile would expand 69 percent in 2020, and 207 percent in 2050. This is an 81 percent increase in potential distribution from 2020 to 2050

(Escobedo-Galván *et al.* 2008, presentation, pp. 9–10).

The study also predicted that increased global temperatures would have a significantly negative impact on the sex ratios of the American crocodile. Like many other crocodilian species, both the American and the Morelet's crocodile exhibit temperature-dependent sex determination. The macroclimate (global climate) affects the mesoclimate (the temperature outside of a crocodile's nest), which in turn affects the microclimate (the temperature inside of a crocodile's nest), which in turn determines the proportion of males to females produced in the nest (Escobedo-Galván *et al.* 2008, presentation, p. 4). Incubation temperatures greater than about 93 °F (34 °C) or less than 90 °F (32 °C) produce females while temperatures between 90–93 °F (32–34 °C) generally produce males (Escobedo-Galván 2006, p. 133; Escobedo-Galván *et al.* 2008, p. 2). Thus, the production of males is entirely dependent upon a sustained incubation temperature range of only 3 degrees. Incubation temperatures greater than 97 °F (36 °C) are at the upper end of the tolerance range for reptile eggs and result in death of embryos and stress to the surviving hatchlings (Escobedo-Galván *et al.* 2008, presentation, p. 2).

According to Escobedo-Galván *et al.* (2008), the current sex ratio of the American crocodile favors females (based on potential species distribution): 75 percent of the potential species distribution has fewer males than females, 15 percent has an equal number of males and females, and 10 percent has more males than females. The study predicted that by 2020, the sex ratio is expected to shift in favor of males due to increases in nest temperature as a result of climate change: 24 percent of the potential species distribution will have fewer males than females, 16 percent will have an equal number of males and females, and 60 percent will have more males than females (Escobedo-Galván *et al.* 2008, presentation, pp. 11–12). Under this scenario, the number of females produced will be reduced significantly by 2020, which in turn will reduce the overall total eggs laid in each breeding season. Of the eggs laid, more are likely to become males, which in turn would further reduce the number of breeding females produced over time. Escobedo-Galván *et al.* (2008) predicted that by 2050, American crocodiles would become extinct in Florida, the Caribbean, or Central America (Escobedo-Galván *et al.* 2008, presentation, p. 13).

Although American crocodiles are found primarily in saline and brackish environments, they can also be found in abandoned coastal canals and borrow pits, and may range inland into freshwater environments preferred by Morelet's crocodiles, such as lakes and lower reaches of large rivers. American crocodiles are extremely adaptable in their nesting strategy, and while they mainly nest in holes, individuals will readily build mound nests if suitable materials are available. American and Morelet's crocodiles have been known to lay eggs within the same nest mound as conspecifics, suggesting a more gregarious and tolerant demeanor (Brien et al. 2007, pp. 17–18). Sea-level rise would significantly expand the amount of inland saline and brackish coastal habitat available to the American crocodile, and correspondingly decrease the amount of inland freshwater habitat available to the Morelet's crocodile. The area of available land would also be reduced as a result of sea-level rise, further increasing competition between the two species for terrestrial activities such as nesting and basking on the shoreline.

The study by Escobedo-Galván *et al.* (2008) did not provide any information or data on the effects of climate change on the Morelet's crocodile. Although the American crocodile and Morelet's crocodile have overlapping ranges, similar life-history requirements, and may lay eggs in the same nest, we do not have any evidence that climate change currently poses a threat to the Morelet's crocodile. Ross (2010, pers. comm.) noted that while climate change constitutes one of the most pressing potential threats to biodiversity, crocodilians seem the most adapted to be minimally impacted. ''Crocodilians have demonstrably survived several previous periods of climate change comparable to current and predicted scenarios and while they may well change distribution and experience sex ratio and physiological effects, these seem well within the capacity of this species. They seem likely to be one of those species that will adapt to climate change, neither going extinct or requiring significant movement or mitigation.'' Thus, although climate change may represent a potential threat to the Morelet's crocodile, all indications are that it is not likely to become a threat to this species in the foreseeable future.

Other Potential Concerns

Other information obtained by the Service, however, suggests that the construction and operation of dams to generate electricity could be a conservation threat to the Morelet's crocodile (for example, the Chalillo hydroelectric dam in Belize on the Macal River, an area inhabited by the Morelet's crocodile) (Environment News Service 2004, p. 1; Hogan 2008, p. 2). At the national level, six main environmental issues affecting natural resources have been identified for Belize: (1) High deforestation rate; (2) solid and liquid waste management issues; (3) rising poverty rates; (4) rapid coastal development; (5) ineffective institution and legal frameworks; and (6) oil discovery (Young 2008, p. 18).

We do not have any information to indicate the extent of the impact, if any, that these environmental issues may have on the Morelet's crocodile in Belize. There is no evidence that these environmental issues in Belize currently pose a threat to the species. Although they may represent a potential threat, we do not have any data to indicate that they are likely to become a threat in the foreseeable future.

There has been some information indicating that fishing nets (for fish and turtles) and death by drowning are threats to the Morelet's crocodile in Guatemala, but we do not have information regarding specific rates of injury or mortality (CITES 2008, p. 18). CONABIO (2005, p. 27) suggested that the number of crocodiles accidentally captured in nets in Guatemala was low, but the basis for this claim was unclear. Platt and Thorbjarnarson (2000b, p. 27) noted that ''a limited number of crocodiles'' drown in fish and turtle nets in northern Belize each year. There is no evidence that fishing currently poses a threat to the species. Although it may represent a potential threat, we do not have any data to indicate that it is likely to become a threat in the foreseeable future.

Summary of Factor E

Few, if any, natural or manmade factors are anticipated to affect the continued existence of the Morelet's crocodile. While natural factors such as hurricanes and extended dry seasons (CONABIO 2005, p. 32) may affect the species, we believe that the species has evolved with these kinds of events, and the events do not pose a threat to the species.

Several phenomena are categorized here as other natural or manmade factors that were considered as potentially affecting the conservation status of the Morelet's crocodile in the foreseeable future. Our knowledge about these factors is incomplete and uneven among the three range countries. Environmental contaminants, especially DDE and mercury, have been widely

reported for Belize. To date, however, there is no evidence of negative effects to the Morelet's crocodile due to exposure to organochlorines even though these contaminants have been linked to documented adverse effects on population health in a similar species, the American alligator.

Vitellogenin induction in males, suggesting endocrine disruption due to environmental contamination, is predicted in Belize, but has not been documented. These factors do not appear to pose a conservation threat to the Morelet's crocodile in Belize at this time. Information about environmental contaminants in Mexico and Guatemala with regard to the Morelet's crocodile is limited. Potential environmental contaminant issues with respect to the Morelet's crocodile probably are the least well known in Mexico, but that country has an extensive legal framework to resolve any problems that may develop, especially if contaminants also become a public health issue. We do not have any information to indicate that environmental contaminants pose a danger to the species throughout its range. Although environmental contaminants may represent a potential threat, especially given the potential for bioaccumulation of contaminants during the species' long reproductive life, we do not have any data to indicate that environmental contaminants are likely to become a threat to the species in the foreseeable future.

Bycatch in fishing nets has been mentioned as a potential problem in Guatemala. In Belize, a ''limited number of crocodiles'' may die or be injured in nets (Platt and Thorbjarnarson 2000b, p. 27), while information about the potential negative effects of fishing nets on the Morelet's crocodile in Mexico is limited. Overall, these local impacts do not appear to have any significant impact on Morelet's crocodiles. Although bycatch in fishing nets may represent a potential threat, we do not have any data to indicate that it is likely to become a threat in the foreseeable future.

Genetic diversity and integrity is a relatively complicated subject with respect to the Morelet's crocodile, and our knowledge across the three range countries is uneven. Studies in Belize suggest that wild populations in that country have a high degree of genetic diversity (Dever and Densmore 2001, pp. 543–544; Dever *et al.* 2002, p. 1084). Hybridization between the Morelet's crocodile and the American crocodile has been documented for eastern Belize and the eastern and northern coasts of the Yucatan Peninsula in Mexico (Ray *et al.* 2004, p. 440; Cedeño-Vázquez *et al.* 2008, p. 661; Rodriguez *et al.* 2008, p. 674). The nature and extent of genetic variation of captive-bred populations with respect to wild populations, as well as male-biased sex ratios, are also poorly understood issues, but potentially important in Mexico where captive-bred individuals may eventually be released into the wild. There is no indication, however, that the Morelet's crocodile suffers from any genetic limitations throughout its range.

Natural weather events do not appear to have any population-level impacts to the Morelet's crocodile, which has evolved to thrive in this climate. We also do not have any evidence that climate change poses a threat to the species. Although climate change may represent a potential threat, especially given the crocodilian requirement for temperature dependent sex determination, we do not have any data to indicate that climate change is likely to become a threat in the foreseeable future.

Although some local factors continue to affect the Morelet's crocodile, we do not have any information to indicate that these factors are of sufficient magnitude to affect any population of the Morelet's crocodile. In conclusion, we find that other natural and manmade factors are not a significant factor affecting the Morelet's crocodile throughout its range, both now and for the foreseeable future.

Finding

We have carefully assessed the best scientific and commercial data available and have determined that the Morelet's crocodile is no longer endangered or threatened throughout all of its range. When considering the listing status of the species, the first step in the analysis is to determine whether the species is in danger of extinction or likely to become endangered throughout all of its range. For instance, if the threats on a species are acting only on a portion of its range, but the effects of the threats are such that they do not place the entire species in danger of extinction or likely to become endangered, we would not retain the entire species on the list.

In developing this final rule, we have carefully assessed the best scientific and commercial data available regarding the threats facing this species, as well as the ongoing conservation efforts by the three range countries. This information indicates that numbers of Morelet's crocodiles have significantly increased over the past 4 decades since being categorized as depleted by species experts in the 1970s. In Mexico and Belize, the species is broadly distributed geographically, essentially occupying the entire historical range, and age classes reflect healthy reproduction and recruitment into a wild breeding population of about 10,000–20,000 adults (Ross 2000, p. 3; CONABIO 2005, p. 19).

We have identified a number of potential threats to the Morelet's crocodile. Some of these potential threats may directly or indirectly affect individual Morelet's crocodiles, while others may affect Morelet's crocodile habitat. The contributions of these potential threats, identified in the Summary of Factors Affecting the Species sections above, are discussed in approximate descending magnitude of impact in the foreseeable future:

(1) A continuation of wild harvest for ranching or direct export may pose a threat to the species if the countries decide to change course. However, if conducted in compliance with CITES, the wild harvest would have to be non-detrimental for the specimens to enter international trade. Our assessment of the risk associated with this potential threat is based primarily on the demonstrated adverse effects of past overharvest on populations. Additional monitoring programs and adequate regulatory mechanisms would need to be established prior to legalizing ranching. Such mechanisms would be important to prevent the laundering of illegally harvested Morelet's crocodiles. We find that, taken together, the currently existing protections (described above in the Factor D section, Inadequacy of Existing Regulatory Mechanisms) are adequate, and they will remain adequate to protect the Morelet's crocodile and its habitat in the majority of its range now and within the foreseeable future.

(2) The detection of organic and inorganic environmental contaminants in Morelet's crocodile eggs in Belize indicates that impacts from concentrations of environmental contaminants may represent a potential threat because Morelet's crocodiles have a long lifespan during which contaminants may bioaccumulate. However, there is no evidence that environmental contaminants are currently affecting populations (numbers and reproduction appear to be robust). In order to determine that environmental contaminants may be a threat to the Morelet's crocodile in the future, their presence in the environment must be occurring at a level that affects the long-term population levels over at least a significant portion of the range of the species. We know of no ongoing monitoring of environmental contaminants anywhere in the species'

range. Although 45 articles within the Mexican LGEEPA deal with environmental contamination (CONABIO 2005, Annex 3, p. 1), we have not received a detailed analysis of the specific provisions and their relevance to Morelet's crocodile. We are unaware of regulatory mechanisms governing activities that discharge environmental contaminants that potentially affect Morelet's crocodile in Belize. However, we do not have any data to indicate that environmental contaminants are likely to become a threat in the foreseeable future.

(3) Although habitat loss and degradation continues to negatively affect the habitat for some local populations of the Morelet's crocodile, we do not have any information to indicate that it is of sufficient magnitude to have a rangewide impact on the species to the point that would cause the Morelet's crocodile to meet the definition of either an endangered or a threatened species. The species' relatively wide distribution throughout its historical range and apparent tolerance for habitats in proximity to agriculture, grazing, and human habitation are substantial factors mitigating these impacts to Morelet's crocodiles over the next several decades. We anticipate that these conditions will remain essentially the same in the foreseeable future due to the adequate regulatory mechanisms in place to protect suitable habitat for the Morelet's crocodile in the majority of its range (see discussion above under the Factor D. section, Inadequacy of Existing Regulatory Mechanisms).

The Morelet's crocodile continues to be affected by a variety of potential residual threats. It is likely that development, hurricanes and other storm events, random human disturbance, fishery activities, oil spills, and infestation by parasites will continue to impact individual crocodiles into the future. Although these impacts are generally expected to continue intermittently at low levels into the foreseeable future, we do not expect these impacts to significantly affect the Morelet's crocodile to the point that they would result in declines in the rangewide status of the species.

Although some potential threats to the Morelet's crocodile remain throughout its range, as discussed above, they are at a low enough level they are not having a significant population-level or demographic effect on Morelet's crocodile populations in Mexico and Belize; in fact, most populations are stable and/or increasing and still occur in their historical range. Any low-level threats occurring in Guatemala are currently being addressed by the Guatemalan national and provincial governments with the help of the local and international NGO community. We do not believe, based on the best available information, that the extent of potential threats to the species in Guatemala, even if the extent of the potential threats increase, will cause the Morelet's crocodile to become endangered or threatened in the future. The government of Guatemala recognizes the importance of this and other landscape species in the Guatemalan Maya Biosphere and are implementing regulatory and enforcement controls to combat human encroachment, land clearing, fires, and other illegal activities that may pose a threat to these species. In addition, Guatemala's request to keep Guatemala's populations of Morelet's crocodile in Appendix I attests to their commitment to ensure trade does not affect Guatemala's wild Morelet's crocodile populations.

The population viability analysis (PVA) conducted by Sanchez (Sánchez 2005) suggests the probability of survival of a population of 30,000 individuals (roughly ⅓ of the actual population of Morelet's crocodiles), subject to high-stress conditions, is approximately 86 percent, and the long-term prognosis for the survival and genetic diversity of the Morelet's crocodile throughout its range is very good, estimating that the average time to reach the quasi-extinction threshold of 500 individuals being 483 years (Sánchez 2005, pp. 43–61).

A species is ''endangered'' for purposes of the Act if it is in danger of extinction throughout all or a significant portion of its range and is ''threatened'' if it is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. The word ''range'' is used here to refer to the range in which the species currently exists, and the word ''significant'' refers to the value of that portion of the range being considered to the conservation of the species.

In considering the foreseeable future as it relates to the status of the Morelet's crocodile, we defined the ''foreseeable future'' to be the extent to which, given the amount and substance of available data, events or effects can and should be anticipated, or the threats reasonably extrapolated. We considered the historical data to identify any relevant threats acting on the species, ongoing conservation efforts, data on species abundance and persistence at individual sites since the time of listing, and identifiable informational gaps and uncertainties regarding residual and emerging threats to the species, as well as population status and trends. We then looked to see if reliable predictions about the status of the species in response to those factors could be drawn. We considered the historical data to identify any relevant existing trends that might allow for reliable prediction of the future, in the form of extrapolating the trends. We also considered whether we could reliably predict any future events, not yet acting on the species and, therefore, not yet manifested in a trend, that might affect the status of the species, recognizing that our ability to make reliable predictions into the future is limited by the variable quantity and quality of available data. Following a range-wide threats analysis, we evaluated whether the Morelet's crocodile is endangered or threatened in any significant portion(s) of its range.

As required by the Act, we considered the five factors, alone and in combination, in assessing whether the Morelet's crocodile is endangered or threatened throughout all or a significant portion of its range. We reviewed the petition, information available in our files, comments and information received after the publication of our 90-day finding (71 FR 36743; June 28, 2006), comments received after the publication of our 12-month finding and proposed rule (76 FR 23650; April 27, 2011) and other available published and unpublished information, and we consulted with recognized experts. We have carefully assessed the best available scientific and commercial data regarding the past, present, and future threats faced by the Morelet's crocodile. We found that although some localized impacts to individual Morelet's crocodiles still occur, such as habitat loss from agricultural development, they have been reduced enough so as to not affect the species on a population level. In addition to the five-factor analysis, we also considered the progress made by the range countries towards addressing previous threats to Morelet's crocodiles. We took into consideration the conservation actions that have occurred, are ongoing, and are planned. Since listing, the species' status has improved because of the following:

- National and international laws and treaties have minimized the impacts of hunting and trade in wild-caught specimens.
- Morelet's crocodile populations are stable or increasing.
- Total population size is approximately 19,400 adults in the three range countries.

• Species experts now widely characterize Morelet's crocodile populations as healthy.

• The current rangewide distribution of Morelet's crocodile now closely resembles the historical rangewide distribution.

• Range countries have improved efforts to protect and manage Morelet's crocodile habitat.

• The long-term prognosis for the survival and genetic diversity of the Morelet's crocodile throughout its range is very good.

In sum, the ongoing development and updating of management plans, the active management of habitat, the ongoing research, and the protections provided by laws and protected lands provide compelling evidence that recovery actions have been and will continue to be successful.

The primary factor that led to the listing of the Morelet's crocodile was trade. However, the trend today is towards increasing population sizes, with trade restricted to ''sources other than wild'' specimens only. We find that the localized impacts identified in the three range countries, when combined with the increase in population sizes, ongoing active research and management, and protections provided by range countries, those impacts are not of sufficient imminence, intensity, or magnitude to indicate that the Morelet's crocodile is threatened with extinction now or in the foreseeable future. Consequently, we have determined that Morelet's crocodile is no longer endangered or threatened throughout its range.

Having determined that the Morelet's crocodile is no longer endangered or threatened throughout its range, we must next determine if the threats to the Morelet's crocodile are not uniformly distributed such that populations in one portion of its range experience higher a level of threats than populations in other portions of its range.

Significant Portion of Its Range

The Act defines ''endangered species'' as any species which is ''in danger of extinction throughout all or a significant portion of its range,'' and ''threatened species'' as any species which is ''likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.'' The definition of ''species'' is also relevant to this discussion. The Act defines ''species'' as any subspecies of fish or wildlife or plants, and any distinct population segment [DPS] of any species of vertebrate fish or wildlife which interbreeds when mature. The phrase ''significant portion of its range'' (SPR) is not defined by the statute, and we have never addressed in our regulations either: (1) The consequences of a determination that a species is either endangered or likely to become so throughout a significant portion of its range, but not throughout all of its range; or (2) what qualifies a portion of a range as ''significant.''

For the purposes of this finding, we interpret the phrase ''significant portion of its range'' in the Act's definitions of ''endangered species'' and ''threatened species'' to provide an independent basis for listing; thus there are two situations (or factual bases) under which a species would qualify for listing: a species may be endangered or threatened throughout all of its range; or a species may be endangered or threatened in only a significant portion of its range. If a species is in danger of extinction throughout an SPR, then that species is an ''endangered species.'' The same analysis applies to ''threatened species.'' Based on this interpretation and supported by existing case law, the consequence of finding that a species is endangered or threatened in only a significant portion of its range is that the entire species will be listed as endangered or threatened, respectively, and the Act's protections will be applied across the species' entire range.

We conclude, for the purposes of this finding, that interpreting the SPR phrase as providing an independent basis for listing is the best interpretation of the Act because it is consistent with the purposes and the plain meaning of the key definitions of the Act; it does not conflict with established past agency practice, as no consistent, long-term agency practice has been established; and it is consistent with the judicial opinions that have most closely examined this issue. Having concluded that the phrase ''significant portion of its range'' provides an independent basis for listing and protecting the entire species, we next turn to the meaning of ''significant'' to determine the threshold for when such an independent basis for listing exists.

Although there are potentially many ways to determine whether a portion of a species' range is ''significant,'' we conclude, for the purposes of this finding, that the significance of the portion of the range should be determined based on its biological contribution to the conservation of the species. For this reason, we describe the threshold for ''significant'' in terms of an increase in the risk of extinction for the species. We conclude that a biologically based definition of ''significant'' best conforms to the purposes of the Act, is consistent with judicial interpretations, and best ensures species' conservation. Thus, for the purposes of this finding, and as explained further below, a portion of the range of a species is ''significant'' if its contribution to the viability of the species is so important that without that portion, the species would be in danger of extinction.

We evaluate biological significance based on the principles of conservation biology using the concepts of redundancy, resiliency, and representation. Resiliency describes the characteristics of a species and its habitat that allow it to recover from periodic disturbance. Redundancy (having multiple populations distributed across the landscape) may be needed to provide a margin of safety for the species to withstand catastrophic events. Representation (the range of variation found in a species) ensures that the species' adaptive capabilities are conserved. Redundancy, resiliency, and representation are not independent of each other, and some characteristic of a species or area may contribute to all three. For example, distribution across a wide variety of habitat types is an indicator of representation, but it may also indicate a broad geographic distribution contributing to redundancy (decreasing the chance that any one event affects the entire species), and the likelihood that some habitat types are less susceptible to certain threats, contributing to resiliency (the ability of the species to recover from disturbance). None of these concepts is intended to be mutually exclusive, and a portion of a species' range may be determined to be ''significant'' due to its contributions under any one or more of these concepts.

For the purposes of this finding, we determine whether a portion qualifies as ''significant'' by asking whether without that portion, the representation, redundancy, or resiliency of the species would be so impaired that the species would have an increased vulnerability to threats to the point that the overall species would be in danger of extinction (i.e., would be ''endangered''). Conversely, we would not consider the portion of the range at issue to be ''significant'' if there is sufficient resiliency, redundancy, and representation elsewhere in the species' range that the species would not be in danger of extinction throughout its range if the population in that portion of the range in question became extirpated (extinct locally).

We recognize that this definition of ''significant'' (a portion of the range of a species is ''significant'' if its contribution to the viability of the

species is so important that without that portion, the species would be in danger of extinction) establishes a threshold that is relatively high. On the one hand, given that the consequences of finding a species to be endangered or threatened in an SPR would be listing the species throughout its entire range, it is important to use a threshold for ''significant'' that is robust. It would not be meaningful or appropriate to establish a very low threshold whereby a portion of the range can be considered ''significant'' even if only a negligible increase in extinction risk would result from its loss. Because nearly any portion of a species' range can be said to contribute some increment to a species' viability, use of such a low threshold would require us to impose restrictions and expend conservation resources disproportionately to conservation benefit: Listing would be rangewide, even if only a portion of the range of minor conservation importance to the species is imperiled. On the other hand, it would be inappropriate to establish a threshold for ''significant'' that is too high. This would be the case if the standard were, for example, that a portion of the range can be considered ''significant'' only if threats in that portion result in the entire species' being currently endangered or threatened. Such a high bar would not give the SPR phrase independent meaning, as the Ninth Circuit held in *Defenders of Wildlife* v. *Norton,* 258 F.3d 1136 (9th Cir. 2001).

The definition of ''significant'' used in this finding carefully balances these concerns. By setting a relatively high threshold, we minimize the degree to which restrictions will be imposed or resources expended that do not contribute substantially to species conservation. But we have not set the threshold so high that the phrase ''in a significant portion of its range'' loses independent meaning. Specifically, we have not set the threshold as high as it was under the interpretation presented by the Service in the *Defenders* litigation. Under that interpretation, the portion of the range would have to be so important that current imperilment there would mean that the species would be *currently* imperiled everywhere. Under the definition of ''significant'' used in this finding, the portion of the range need not rise to such an exceptionally high level of biological significance. (We recognize that if the species is imperiled in a portion that rises to that level of biological significance, then we should conclude that the species is in fact imperiled throughout all of its range, and that we would not need to rely on the SPR language for such a listing.) Rather, under this interpretation we ask whether the species would be endangered everywhere without that portion, *i.e.,* if that portion were completely extirpated. In other words, the portion of the range need not be so important that even the species being in danger of extinction in that portion would be sufficient to cause the species in the remainder of the range to be endangered; rather, the *complete extirpation* (in a hypothetical future) of the species in that portion would be required to cause the species in the remainder of the range to be endangered.

The range of a species can theoretically be divided into portions in an infinite number of ways. However, there is no purpose to analyzing portions of the range that have no reasonable potential to be significant or to analyzing portions of the range in which there is no reasonable potential for the species to be endangered or threatened. To identify only those portions that warrant further consideration, we determine whether there is substantial information indicating that: (1) The portions may be ''significant,'' and (2) the species may be in danger of extinction there or likely to become so within the foreseeable future. Depending on the biology of the species, its range, and the threats it faces, it might be more efficient for us to address the significance question first or the status question first. Thus, if we determine that a portion of the range is not ''significant,'' we do not need to determine whether the species is endangered or threatened there; if we determine that the species is not endangered or threatened in a portion of its range, we do not need to determine if that portion is ''significant.'' In practice, a key part of the determination that a species is in danger of extinction in a significant portion of its range is whether the threats are geographically concentrated in some way. If the threats to the species are essentially uniform throughout its range, no portion is likely to warrant further consideration. Moreover, if any concentration of threats to the species occurs only in portions of the species' range that clearly would not meet the biologically based definition of ''significant,'' such portions will not warrant further consideration.

After reviewing the potential threats throughout the range of the Morelet's crocodile, we determine that there is one portion, Guatemala, in which threats could be considered to be concentrated. However, Guatemala comprises a small portion of the overall range of the Morelet's crocodile. The estimated number of Morelet's crocodiles in Guatemala is 13 percent of the potential global population estimate. The extent of undisturbed habitat in Guatemala is estimated to be 19 percent of the total range of undisturbed habitat for the species (CONABIO 2005, pp. 16–19).

As stated above, a portion of the range of a species is ''significant'' if it contributes to the viability of the species, and is so important that without that portion, the species would be in danger of extinction. Although Guatemala's commitment to the conservation of the Morelet's crocodile and its habitat has markedly improved, past drug trade, land grabs, the presence of human settlements, expanding agriculture and cattle ranching, poaching, forest fires, the oil industry, habitat fragmentation, environmental contamination, introduction of invasive species, and an almost complete lack of institutional control over their protected areas (IARNA URL IIA 2006, pp. 88–92) has greatly limited, Guatemala's potential contribution to the conservation status of the species. In addition, we have no information indicating that the Guatemala population is genetically different from the remainder of the range, and we are unaware of any data or information indicating that the Morelet's crocodile in Guatemala is ecologically unusual, unique, or otherwise significant to the species as a whole in any way. We find that if there were a loss of the Guatemalan range, it would be unlikely to place the remainder of the species in danger of extinction. Thus, we conclude that Guatemala does not qualify as a significant portion of the species' range, and therefore find that the species does not warrant listing throughout a significant portion of its range.

Distinct Vertebrate Population Segment

Section 3(16) of the Act defines ''species'' to include any species or subspecies of fish and wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature (16 U.S.C. 1532(16)). After assessing whether or not the Morelet's crocodile is endangered or threatened throughout all or a significant portion of its range, we next consider whether a distinct vertebrate population segment (DPS) of the Morelet's crocodile meets the definition of endangered or is likely to become endangered in the foreseeable future (threatened).

To interpret and implement the DPS provisions of the Act and congressional

guidance, the Service and the National Marine Fisheries Service (now the National Oceanic and Atmospheric Administration—Fisheries Service) published the *Policy Regarding the Recognition of Distinct Vertebrate Population Segments* (DPS Policy) in the **Federal Register** on February 7, 1996 (61 FR 4722). Under the DPS Policy, we evaluate a set of elements in a three-step process in order to make our decision concerning the establishment and classification of a possible DPS. These elements are applied similarly for additions to or removals from the Federal Lists of Endangered and Threatened Wildlife and Plants.

These elements include: (1) The discreteness of a population in relation to the remainder of the taxon to which it belongs; (2) the significance of the population segment to the taxon to which it belongs; and (3) the population segment's conservation status in relation to the Act's definitions of ''endangered'' species and ''threatened'' species.

First, the Policy requires the Service to determine that a vertebrate population is discrete in relation to the remainder of the taxon to which it belongs. Discreteness refers to the ability to delineate a population segment from other members of a taxon based on either (1) Physical, physiological, ecological, or behavioral factors; or (2) international governmental boundaries that result in significant differences in control of exploitation, management, or habitat conservation status, or regulatory mechanisms that are significant in light of section 4(a)(1)(D) of the Act—the inadequacy of existing regulatory mechanisms.

Second, if we determine that the population is discrete under one or more of the discreteness conditions, then a determination is made as to whether the population is significant to the larger taxon to which it belongs in light of Congressional guidance (see Senate Report 151, 96th Congress, 1st Session) that the authority to list a DPS be used ''sparingly and only when the biological evidence indicates that such action is warranted.'' In carrying out this examination, we consider available scientific evidence of the population's importance to the taxon to which it belongs. This consideration may include, but is not limited to the following: (1) The persistence of the population segment in an ecological setting that is unique or unusual for the taxon; (2) evidence that loss of the population segment would result in a significant gap in the range of the taxon; (3) evidence that the population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside of its historical range; and (4) evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics from other populations of the species. The Service may determine that a population segment is significant to the taxon to which it belongs based on sufficiently strong evidence with respect to any one of these considerations.

Lastly, if we determine that a population segment is significant to the taxon to which it belongs based on these considerations, then the policy requires an analysis of the population segment's conservation status in relation to the Act's definitions of ''endangered species'' and ''threatened species.''

Discreteness

The first step in our DPS analysis for the Morelet's crocodile was to determine whether there were any populations of the Morelet's crocodile that were discrete in relation to the remainder of the taxon to which it belongs. Under the DPS Policy, a population segment of a vertebrate taxon may be considered discrete if it satisfies either one of the following conditions: (1) It is markedly separated from other populations of the same taxon because of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation; or (2) it is delimited by international governmental boundaries within which differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the Act—the inadequacy of existing regulatory mechanisms. Recognition of international boundaries when they coincide with differences in the management, status, or exploitation of the species under the Act is consistent with CITES, which recognizes international boundaries for these same reasons. CITES is implemented in the United States by the Act.

Physical, Physiological, Ecological, or Behavioral Factors

We do not have any data or information to indicate that there are any physical, physiological, ecological, or behavioral facts that separate any populations of the Morelet's crocodile. The historical distribution of the Morelet's crocodile comprised the eastern coastal plain of Mexico, most of the Yucatan Peninsula, Belize, and northern Guatemala (Hurley 2005, p. 1), with an estimated historical distribution covering 173,746 mi^2 (450,000 km^2) (Sigler and Domínguez Laso 2008, pp. 11–12). The Morelet's crocodile is a wide-ranging species that occurs primarily in freshwater environments such as lakes, swamps, and slow-moving rivers. This species of crocodile can temporarily inhabit intermittent freshwater bodies such as flooded savannahs and is occasionally observed in brackish coastal lagoons (Villegas 2006, p. 8).

We do not have any data or information to indicate that any populations of the Morelet's crocodile exhibit genetic or morphological discontinuity that may indicate that they are a separate population. Although we do not have any data or information on the dispersal strategies for the Morelet's crocodile that would indicate a population may be discrete, we have no evidence to suggest that there are barriers that would prevent the Morelet's crocodile from dispersing within its known range. The current rangewide distribution of the Morelet's crocodile closely mirrors the historical rangewide distribution, and there is a large amount of high-quality habitat available. Therefore, we have no evidence suggesting that the Morelet's crocodile is isolated in any part of its range.

International Differences in Species' Conservation Status

As discussed above in the Factor D section, Inadequacy of Existing Regulatory Mechanisms, all three range countries are Parties to CITES. In addition, data and information available to the Service indicates that all three range countries have federally protected-species and protected-areas legislation under the jurisdiction of specific ministries or departments that control activities that affect the Morelet's crocodile and its habitat. Mexico's Federal legal framework is particularly robust. The CITES National Legislation Project (*http://www.CITES.org*) deemed both Mexico and Guatemala's national legislation as Category 1, meeting all the requirements to implement CITES. Belize is currently considered to be Category 3 (not meeting the requirements for implementing CITES), but has submitted to CITES a national legislation plan and draft of legislation, which, if adopted, may qualify Belize as Category 1.

Based on current data and information available to the Service, the Governments of Mexico, Guatemala, and

Belize appear to be adequately enforcing their respective legal frameworks, both at the federal level and under CITES. Mexico and Belize contain the majority of wild Morelet's crocodiles (87 percent) and the majority of the potentially suitable habitat (81 percent) throughout the species' range. Because of this adequate enforcement, the majority of the threats to the species and its habitat have been eliminated in Mexico and Belize. Although some residual threats remain, these threats have been reduced to a low enough level that they are not having significant population level or demographic effects.

In contrast, based on data and information available to the Service, it appears that in the past, the Government of Guatemala was not able to enforce adequately their legal framework to protect the Morelet's crocodile and its habitat in Guatemala. The lack of funding and personnel made enforcement of Guatemala's legal framework especially challenging. Conservation actions were often overwhelmed by slow economic development, high levels of poverty, unequal land distribution, a highly segmented society, and the effects of more than three decades of civil war (Birner *et al.* 2005, pp. 285, 292).

For example, ParkWatch (2003) noted that a designation as a national park or important wetland conservation area in Guatemala does not necessarily afford protection to the Morelet's crocodile or its habitat. The Laguna del Tigre National Park, located in Petén region of Guatemala, is home to the largest population of Morelet's crocodiles in Guatemala. The park was considered by ParkWatch as critically threatened due to drug trade, land grabs, the presence of human settlements, expanding agriculture and cattle ranching, poaching, forest fires, the oil industry, and an almost complete lack of institutional control over the area (ParksWatch 2003, pp. 1, 11). However, by 2004, ParksWatch stated that the staff at Laguna del Tigre had doubled in size since their 2003 report. Seventy-three park rangers, 10 archeological site guards, and 96 Army personnel were hired to staff the park and since the increase in staffing, both the park and the biotope are ''constantly patrolled.'' In addition, the Wildlife Conservation Society continued its ''Biodiversity Conservation at a Landscape Scale'' program (with USAID) for Guatemala and has provided a comprehensive plan with specific goals to preserve and protect wildlife in the Maya Biosphere Reserve in Guatemala through conserving wildlife species and their habitat, while maintaining the economic productivity of renewable natural resources. They are fulfilling these goals by establishing specific parameters: ''to develop adaptive and participatory strategy to reduce threats to wildlife in the MBR; to develop, implement, and monitor sustainable mechanisms to reduce threats to wildlife and ecosystems across the MBR landscape; to learn and teach best management practices for the conservation of the MBR and beyond; and to guide, design, and test wildlife-focused planning'' (WCS 2008, p. 3). These efforts were endorsed by the president of Guatemala through his office's attendance at the Mesa Multisectorial roundtable discussion held in Guatemala in 2009.

Many outstanding accomplishments have been achieved in Guatemala in terms of biodiversity conservation (IARNA URL IIA 2006, p. 22), and efforts to achieve desired levels of environmental management are ongoing. In August 2010, the president of Guatemala announced that he is deploying 250 soldiers to recover fully all the protected zones of El Petén in the Laguna del Tigre section of the MBR. This ''Green Battalion'' was deployed specifically to protect the Laguna del Tigre National Park and to work jointly with the National Civil Police and the Attorney General's Office to combat drug trafficking and the illegal harvest of natural resources and archaeological sites of that region of the MBR (Latin American Herald Tribune, December 6, 2010). Additional help from WCS and USAID includes establishing over-flights to monitor fires, locating illegal settlements, and notifying the national and provincial governments (as well as the national media) of illegal activities. These efforts have resulted in additional personnel added to parks, removal of settlements, consistent patrols and cessation of illegal activities, and educating locals and concessionaires on best management practices for sustainable use of forest products.

Castañeda Moya (1998a, p. 521; 1998b, p. 13) listed illegal hunting as a threat to Morelet's crocodile in the Petén region of Guatemala (CITES 2010a), but did not provide a numerical estimate of the take. ARCAS, an animal welfare group in Guatemala, reported the rescue or recovery of 49 live individuals (about 8 per year), most likely from pet dealers or private individuals, during the period 2002–2007 (ARCAS 2002, p. 3; 2003, p. 2; 2004, p. 2; 2005, p. 2; 2006, p. 3; 2007, p. 3).

The Government of Guatemala acknowledged these issues when it opposed Mexico's 2010 CITES proposal to transfer the Morelet's crocodile from Appendix I to Appendix II throughout its range (See Factor D. Inadequacy of Regulatory Mechanisms, *Mexico's Proposal To Transfer the Morelet's Crocodile to CITES Appendix II.* As a result of the Government of Guatemala's past inability to adequately enforce their legal framework, the Morelet's crocodile in Guatemala may be still subject to some illegal hunting and some destruction of habitat due to previous human encroachment. This constitutes a difference in control of exploitation, management of habitat, conservation status, or regulatory mechanisms that is significant in light of section 4(a)(1)(D) of the Act.

We have determined, based on the best available data and information, that the population of Morelet's crocodiles in Guatemala is discrete due to the significant difference in the control of exploitation, management of habitat, conservation status, or regulatory mechanisms between international boundaries. Therefore, we have determined that the Guatemala population of the Morelet's crocodile meets the requirements of our DPS Policy for discreteness.

Significance

Having determined that the population of Morelet's crocodiles in Guatemala is discrete under one or more of the discreteness conditions described in the DPS Policy, we determined whether the population in Guatemala is significant. We evaluate its biological and ecological significance based on ''the available scientific evidence of the discrete population segment's importance to the taxon to which it belongs'' (61 FR 4722). We make this evaluation in light of congressional guidance that the Service's authority to list a DPS be used ''sparingly.'' As precise circumstances are likely to vary considerably from case to case, the DPS Policy does not describe all the classes of information that might be used in determining the biological and ecological importance of a discrete population. However, the DPS Policy describes four possible classes of information that provide evidence of a population segment's biological and ecological importance to the taxon to which it belongs. As specified in the DPS Policy (61 FR 4722), consideration of the population segment's significance may include, but is not limited to the following: (1) Persistence of the population segment in an ecological setting that is unusual or unique for the taxon; (2) evidence that loss of the population segment would result in a significant gap in the range of the taxon; (3) evidence that the population

segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside of its historical range; and (4) evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

Persistence in a Unique Ecological Setting

As stated in the DPS Policy, occurrence in an unusual ecological setting may be an indication that a population segment represents a significant resource warranting conservation under the Act (61 FR 4724). In considering whether the population occupies an ecological setting that is unusual or unique for the taxon, we evaluate whether the habitat includes unique features not used by the taxon elsewhere and whether the habitat shares many features common to the habitats of other populations. As stated above, the Morelet's crocodile is a wide-ranging species that occurs primarily in freshwater environments such as lakes, swamps, and slow-moving rivers. This species of crocodile can temporarily inhabit intermittent freshwater bodies such as flooded savannahs and is occasionally observed in brackish coastal lagoons (Villegas 2006, p. 8). All 3 of the Morelet's crocodile's range countries have similar freshwater habitats utilized by this species. We do not have any evidence to indicate that the Guatemala population of the Morelet's crocodile occurs in habitat that includes unique features not used by the taxon elsewhere in its range. Morelet's crocodile habitat in the Laguna del Tigre National Park consists of flooded savannahs and marshes that are typical of the species' habitat throughout its range. Therefore, we conclude that the discrete population of Morelet's crocodiles in Guatemala is not ''significant'' because of persistence in a unique or unusual ecological setting.

Significant Gap in the Taxon's Range

As stated in the DPS Policy, evidence that loss of the discrete population segment would result in a significant gap in the range of a taxon is potentially an indication that a population segment represents a significant resource warranting conservation under the Act (61 FR 4724). As the Ninth Circuit has stated, ''[t]he plain language of the second significance factor does not limit how a gap could be important'' (*National Ass'n of Home Builders* v. *Norton,* 340 F.3d 835, 846 (9th Cir. 2003)). Thus, we considered a variety of ways in which the loss of the Guatemala population of the Morelet's crocodile might result in a significant gap in the range of species. Namely, we considered whether Guatemala contributed to the resiliency, redundancy, or representation of the taxon's range. As stated previously in the Significant Portion of its Range analysis, the Service concluded that due to the small size of the Guatemalan portion of the Morelet's crocodile's range and the small population size of the species in Guatemala, its overall contribution to the species was limited. While Guatemala has regulatory mechanisms in place to protect their national parks, it appears that until recently, the government was unable to enforce them adequately. Although Guatemala has conserved several areas of the Morelet's crocodile's range, past threats limited this population's contribution to the species (IARNA URL IIA 2006, pp. 88–92).

The Morelet's crocodile in Guatemala does not significantly contribute to the resiliency, redundancy, or representation of the species or its range, including, but not limited to, the size of the range, habitat quality, habitat variability, or genetic uniqueness. The majority of the species' range occurs in Mexico and Belize, which contain the majority of all wild Morelet's crocodiles (87 percent) and the majority of the potentially suitable habitat throughout the species' range (81 percent). Guatemala is surrounded to the east by Belize, and the north and west by Mexico. It is the southernmost range of the species, which resides primarily in the northern part of the country. Guatemala shares several rivers with the other range countries, including but not limited to, the Rio San Pedro, Rio Pasión, and the Rio Ixcán with Mexico, and the Rio Mopán with Belize. All 3 countries share the Rio Azule. Because they move throughout these river systems, should a discrete population segment of Morelet's crocodiles in Guatemala decrease for any reason (which we have concluded is unlikely), then it is likely that Morelet's crocodiles in Mexico and Belize, where 87 percent of the species exist, could expand their range and recolonize any potential habitat in Guatemala. Finally, in spite of Guatemala's recent successes in mitigating localized threats to Morelet's crocodile habitat, Guatemala's biological contribution to the conservation status of the species is limited, due to past impacts from the drug trade, land grabs, the presence of human settlements, expanding agriculture and cattle ranching, poaching, forest fires, the oil industry, habitat fragmentation, environmental contamination, introduction of invasive species, and lack of institutional control over their protected areas. Thus, we have determined that, although the loss of a discrete population segment in Guatemala may create a gap, we conclude that such a loss would not create a significant gap in the range of the species.

Natural Occurrence of a Taxon Abundant Elsewhere as an Introduced Population

As stated in the DPS Policy, evidence that the population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside of its historical range may be an indication that a population segment represents a significant resource warranting conservation under the Act (61 FR 4724). This element does not apply to the Morelet's crocodile in Guatemala. The Guatemala population of the Morelet's crocodile does not represent the only surviving natural occurrence of the Morelet's crocodile throughout the range of the taxon. After the protections of the Act and CITES were put in place in the 1970s, populations of Morelet's crocodiles increased and expanded their range naturally over time to the point that they have recovered and are now found in all areas of their historical range.

Marked Differences in Genetic Characteristics

As stated in the DPS Policy, evidence that a discrete population segment differs markedly from other populations of the species in its genetic characteristics may be an indication that a population segment represents a significant resource warranting conservation under the Act (61 FR 4724).

Genetic diversity and integrity is a relatively complicated subject with respect to the Morelet's crocodile, and our knowledge across the three range countries is uneven. The genetic data we do have are with respect to hybridization between Morelet's crocodiles and American crocodiles. Thus, we have no information indicating that the Guatemala population is markedly different from the remainder of the range

Summary of Significance

First, we do not have any data or information to indicate that the Guatemala population of the Morelet's crocodile occurs in habitat that includes unique features not used by the taxon elsewhere in its range. Morelet's crocodile habitat in the Laguna del Tigre

National Park consists of flooded savannahs and marshes that are typical of the species' habitat throughout its range. Second, we conclude that based on Guatemala's limited biological contribution to the range of the species, the loss of Morelet's crocodiles in 13 percent of their range would not constitute a significant gap in the range of the species, due to the loss of a population that is ecologically unusual, unique, or otherwise significant to the species as a whole in any way (for example, in terms of species or habitat), or that contributes substantially to the representation, resiliency, or redundancy of the species. Third, the Guatemala population of the Morelet's crocodile does not represent the only surviving natural occurrence of the Morelet's crocodile throughout the range of the taxon. Finally, the Guatemala population of the Morelet's crocodile does not have any genetic characteristics that are markedly different from Morelet's crocodiles elsewhere in the range of the taxon. Therefore, based on the information available to the Service, we conclude that the discrete population of Morelet's crocodiles in Guatemala does not meet the requirements under our DPS Policy for significance.

Based on the best available data and information, we conclude that the Guatemala population of the Morelet's crocodile meets the requirements of our DPS Policy for discreteness, but does not meet the requirements of our DPS policy for significance in relation to the remainder of the taxon (i.e., Morelet's crocodiles in Mexico and Belize). The population of Morelet's crocodiles in Guatemala is discrete due to the significant difference in the control of exploitation, management of habitat, conservation status, or regulatory mechanisms between international boundaries. This difference is evidenced by the fact that Morelet's crocodiles in Guatemala remain listed under Appendix I of CITES, while those in Mexico and Belize were downgraded to Appendix II. The discrete population of Morelet's crocodiles in Guatemala does not meet the requirements of our DPS policy for significance because it: (1) Does not occur in habitat that includes unique features not used by the taxon elsewhere in its range; (2) would not constitute a significant gap in the range of the species due to the loss of a population that contributes substantially to the representation, resiliency, or redundancy of the species; (3) does not represent the only surviving natural occurrence of the Morelet's crocodile throughout the range of the taxon; and (4) does not have any genetic characteristics that are markedly different from Morelet's crocodiles elsewhere in the range of the taxon. Therefore, we conclude that the population of the Morelet's crocodile in Guatemala is not a DPS pursuant to our DPS Policy and, therefore, is not a listable entity under section 3(16) of the Act.

Effects of This Final Rule

This final rule revises our regulations at 50 CFR 17.11(h) by removing the Morelet's crocodile throughout its range from the Federal List of Endangered and Threatened Wildlife. Our regulations do not authorize designating critical habitat in areas outside of the United States. Specifically, our regulations at 50 CFR 424.12(h) specify that critical habitat shall not be designated within foreign countries or in other areas outside of U.S. jurisdiction. Because no critical habitat was ever designated for this species, this rule will not affect 50 CFR 17.95.

The prohibitions and conservation measures provided by the Act, particularly through section 9, will no longer apply after the effective date of this rule (see **DATES,** above). This rulemaking, however, does not affect the protection given to the Morelet's crocodile under CITES. Delisting under the Act allows U.S. import, re-export, and commercial activity in Morelet's crocodiles and their parts and products originating from any country, including the three range countries, provided that the requirements of 50 CFR part 13 (General Permit Procedures), 50 CFR part 14 (Importation, Exportation, and Transportation of Wildlife) and 50 CFR part 23 (CITES) have been met.

Post-Delisting Monitoring

Section 4(g)(1) of the Act requires the Secretary of Interior, through the Service, to implement a system in cooperation with the States to monitor for not less than 5 years the status of all species that are removed from the Lists of Endangered and Threatened Wildlife and Plants (50 CFR 17.11 and 17.12) due to recovery. This monitoring requirement is to ensure prevention of significant risk to the well-being of recovered species.

Species monitoring is also called for under CITES. CITES Resolution Conf. 9.24 (Rev. CoP 15) provides criteria for including species under CITES Appendices I and II. Through the resolution, the parties have resolved that the status of species included in Appendices I and II should be regularly reviewed by the range countries and proponents, in collaboration with the CITES Animals Committee or Plants Committee, in order to monitor the effectiveness of CITES protections, subject to the availability of funds (CITES 2007a, p. 3).

At the international level, perhaps the most important ongoing conservation effort for the Morelet's crocodile is the agreement by the three range countries to develop and implement the Belize-Guatemala-Mexico Tri-national Strategy for the Conservation and Sustainable Management of Morelet's Crocodile (*Crocodylus moreletii*) (Estrategia Trinacional Belice-Guatemala-México para la Conservación y el Manejo Sostenible del Cocodrilo de Morelet (*Crocodylus moreletii*) (Tri-national Strategy) (Sánchez 2006).

This initiative began in June 2001, at Laguna del Tigre National Park, Petén, Guatemala, when representatives of the three countries met to discuss matters of mutual interest. A follow-up meeting attended by about 25 species experts and government officials from all three range countries took place in April 2006 (Mexico City, Mexico). Two working groups were formed: (1) Technical and Scientific Matters; and (2) Administration, Management, and Uses. Group members discussed technical issues for 2 days, and generated a series of products, commitments, and agreements. The first group produced or agreed to compile a series of documents, including distribution maps, survey techniques, scientific literature, and databases (e.g., geographic information system). The second group agreed to work toward a regional assessment of the conservation status of the Morelet's crocodile, as well as development and implementation of regional actions to improve the conservation status of the species (institutional capacity building, project development and implementation, and development of a regional captive-breeding program). The final product of the workshop was the development of ''Estrategia Regional para el Manejo y la Conservación del Cocodrilo de Morelet (*Crocodylus moreletii*) (Regional Strategy for the Management and Conservation of the Morelet's Crocodile) (Regional Strategy), found on pp. 43–53 of the Tri-national Strategy document (Sanchez 2006). This Regional Strategy outlines a series of objectives, products, and working protocols to accomplish the goals of the Tri-national Strategy. As these tasks are completed, they will significantly enhance the conservation status of the Morelet's crocodile.

According to Sánchez Herrera and Álvarez-Romero (2006), as a result of this initiative, the three range countries have agreed to implement the Regional

Strategy, which also includes monitoring the species. The three range countries plan to implement the Regional Strategy by:

(1) Conducting population surveys in defined priority areas using systematic and coordinated monitoring, with standardized fieldwork methods and techniques.

(2) Developing a shared biological and geographical information system.

(3) Identifying priority areas and routes for conservation and surveillance, along with those for future potential for ranching.

(4) Supporting and developing educational programs and outreach materials.

(5) Promoting personnel training and experience exchange, including field techniques and surveillance.

(6) Promoting species-friendly production projects such as closed-cycle farms (and eventually future ranching), along with the development of a legal regional market and a certification strategy for Morelet's crocodile products.

(7) Raising funds in support of the activities and tasks outlined in the Strategy (Sánchez Herrera and Álvarez-Romero 2006, p. 263).

In 2003, CONABIO requested the Natural History and Ecology Institute of Chiapas (IHNE) to develop a study on ''Determination of the status of the wild populations of the Morelet's crocodile (Crocodylus moreletii) in Mexico and evaluation of its status in CITES'' (called the CoPan Project) (CITES 2010a). The Government of Mexico is making efforts to design and implement a countrywide monitoring program for the populations and habitat of the Morelet's crocodile, including the possibility of involving Belize and Guatemala. The aim is to build on the experiences and results of the CoPan Project and the suggestions made at the 23rd meeting of the CITES Animals Committee (Geneva, April 2008, see the Animals Committee summary record labeled as document AC23) to obtain better information about the status and trends of relevant populations of the species and their habitat. The program will be developed in the framework of the Tri-national Strategy (CITES 2010a, p. 9). The Government of Mexico has established contacts with the Governments of Belize and Guatemala as part of the Tri-National Strategy (CITES 2008, p. 32).

Stage 1 of the project is currently under way. It aims to develop a preliminary design of the program, considering relevant areas in the range of the species. Ideally, areas could be selected in the three countries, based on the COPAN Project and subsequent studies. The design was reviewed and assessed in a 2010 workshop involving species experts and authorities, who agreed upon on the most appropriate methods and define time intervals, routes/localities and variables to take into account for crocodiles and their habitat. A manual was developed to ensure the effectiveness of fieldwork and training of staff. This stage also includes the design of a database where information will be organized and centralized (CITES 2010a, p. 9).

To date, the preliminary design proposes a monitoring effort with biannual sampling throughout the range of the species, with observations made in at least three routes per defined region (e.g., 12 regions in Mexico) using nighttime counts. In addition, one of the three routes per region will be selected for capture-mark-recapture of individuals and standard data/sample collection, as well as nest location and monitoring. Information obtained will make it possible to estimate relative abundance indices to detect variations in the population in time; determine the sex and age ratio and the general status and activity of individuals; and obtain data on the reproductive effort and success of the species, and on habitat critical for breeding (CITES 2010a, pp. 9–10).

Stage 2 will be implemented once the monitoring program has been published. It will consist of implementing the actions decided, including setting up and training the field teams; signing the relevant cooperation agreements; carrying out field work, and developing the database. Information stored in the database will be periodically analyzed to produce estimates of the population and its trends in the short, medium, and long term (CITES 2010a, pp. 9–10) (CITES 2010a, p. 10).

In Belize, Dr. Frank Mazzotti (University of Florida) is collaborating with the Belize Forestry Department to develop a national crocodile management program (The Croc Docs 2009, pp. 1–8). This project seeks to develop, in collaboration with the Lamanai Field Research Center, a monitoring program for these species. Along with the monitoring program, the project will develop a training program for government and nongovernment personnel in Belize so that the monitoring program can be maintained. This long-term program has great potential to provide ongoing conservation benefits to the Morelet's crocodile in Belize. However, recent information suggests that little progress has been made for this monitoring program in Belize, and it is currently in the process of being reactivated.

The Act requires the Service to monitor the status of the species in cooperation with the States. The Act defines the term ''State'' as ''any of the several States, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, the Virgin Islands, Guam, and the Trust Territory of the Pacific Islands.'' For species found entirely outside of the United States and therefore outside the areas defined as a ''State'' under the Act, we must cooperate with the species' range countries to meet the post-delisting monitoring requirements of the Act to ensure that the species will maintain its recovered status throughout its range after the protections of Act are removed. As the species experts, the range countries are best qualified to develop and implement a range-wide post-delisting monitoring plan for their species. When this rule becomes effective (see **DATES,** above), and the Morelet's crocodile is delisted under the Act, we will work with the range countries to monitor the status of the species throughout its range via the range countries' implementation of the existing monitoring requirements under CITES, the Tri-national Strategy, the Belizean monitoring program discussed above, and any additional monitoring plans that may be developed in the future.

Peer Review

In accordance with our joint peer review policy with the National Marine Fisheries Service, ''Notice of Interagency Cooperative Policy for Peer Review in Endangered Species Act Activities,'' that was published in the **Federal Register** on July 1, 1994 (59 FR 34270), and the Office of Management and Budget's Final Information Quality Bulletin for Peer Review, dated December 16, 2004, we sought the expert opinions of six independent specialists regarding the science in this rule. The purpose of peer review is to ensure that listing, reclassification, and delisting decisions are based on scientifically sound data, assumptions, and analyses. We sent copies of the April 27, 2011, proposed rule to the peer reviewers immediately following publication in the **Federal Register.** We invited these peer reviewers to comment, during the public comment period, on the specific assumptions and conclusions in the proposed delisting of the Morelet's crocodile. Although we solicited peer review from 6 peer reviewers, only 2 responded. We summarized the opinions of these 2 reviewers in this final rule, and considered their input and any additional information we received as

part of our process of making this final decision.

Required Determinations

Clarity of Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must: (a) Be logically organized; (b) Use the active voice to address readers directly; (c) Use clear language rather than jargon; (d) Be divided into short sections and sentences; and (e) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in the **ADDRESSES** section. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us page numbers and the names of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

National Environmental Policy Act

We have determined that we do not need to prepare an environmental assessment or environmental impact statement, as defined under the authority of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

A complete list of the references used to develop this rule is available upon request from the Endangered Species Program in our Headquarters office (see **FOR FURTHER INFORMATION CONTACT** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we hereby amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Public Law 99–625, 100 Stat. 3500; unless otherwise noted.

§ 17.11 [Amended]

■ 2. Amend § 17.11(h) by removing the entry for ''Crocodile, Morelet's'' under ''REPTILES'' from the List of Endangered and Threatened Wildlife.

Dated: May 11, 2012.

Daniel M. Ashe,

Director, U.S. Fish and Wildlife Service.

[FR Doc. 2012–12263 Filed 5–22–12; 8:45 am]

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