CONVENCION SOBRE EL COMERCIO INTERNACIONAL DE ESPECIES AMENAZADAS DE FAUNA Y FLORA SILVESTRES

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Sexta reunión de la Conferencia de las Partes

Ottawa (Canadá), del 12 al 24 de julio de 1987

Interpretación y aplicación de la Convención

# SITUACION DE CHELONIA MYDAS Y ERETMOCHELYS IMBRICATA DESDE EL PUNTO DE VISTA BIOLOGICO Y COMERCIAL

1. Reconociendo que la explotación de tortugas marinas para el comercio internacional era, y es, un tema sumamente controvertido que fue debatido durante la quinta reunión de la Conferencia de las Partes, y que el debate se vio afectado en gran medida por la falta de información detallada y de una comprensión adecuada del tema, la Secretaría elaboró un proyecto para prestar ayuda a la Conferencia de las Partes en sus deliberaciones sobre esta cuestión mediante el suministro de un resumen objetivo de la información disponible.

2. El Gobierno del Japón financió generosamente la totalidad del proyecto, y ello permitió a la Secretaría firmar un contrato con el Centro UICN de vigilancia continua de la conservación (CMC) para que llevara a cabo la encuesta global sobre la situación de la tortuga verde y la tortuga carey en el medio silvestre y desde el punto de vista comercial. La Secretaría agradece al Japón su apoyo financiero y al CMC/UICN el informe excelente, completo y detallado que ha elaborado.

3. Se distribuirá a los Jefes de Delegación en Ottawa el informe completo del CMC/UICN, en forma de proyecto y en inglés solamente. Los demás participantes que se interesen por el informe podrán obtener ejemplares adicionales al precio de producción. La Secretaría publicará la versión final del informe lo más pronto posible después de la reunión.

4. El anexo 1 del presente documento es un resumen general del informe del CMC/UICN y da una indicación del contenido del mismo.

5. En los anexos 2 y 3 del presente documento figuran resúmenes de las evaluaciones presentadas por el CMC/UICN de las tres propuestas de enmienda a los Apéndices de la CITES relativas a las tortugas marinas, que son objeto de examen en esta reunión. Adjunto a los anexos 2 y 3 figuran los textos completos (en inglés solamente) de las evaluaciones.

6. La Secretaría espera que estos tres documentos, así como todo el informe del CMC/UICN ayudará a la Conferencia de las Partes a decidir una política respecto de la conservación de las tortugas marinas y, particularmente, si se puede justificar la explotación de las poblaciones que viven en el medio silvestre y si se puede considerar beneficiosa, en principio, la cría en cautividad o en granjas de tortugas verdes y/o tortugas carey, dándole así la aprobación de la CITES.

7. Los anexos al presente informe y el informe CMC/UICN reflejan las opiniones de sus autores y no necesariamente las de la Secretaría.

# SITUACION DE CHELONIA MYDAS Y ERETMOCHELYS IMBRICATA DESDE EL PUNTO DE VISTA BIOLOGICO Y COMERCIAL

## INTRODUCCION

Este estudio fue realizado por el Centro UICN de vigilancia continua de la conservación, con un contrato de la Secretaría de CITES, entre el 1° de julio de 1986 y el 30 de abril de 1987. Los principales objetivos del proyecto eran los siguientes:

i) Recopilar y comparar los mejores datos disponibles sobre la situación y distribución de poblaciones significativas de Chelonia mydas y Eretmochelys imbricata, evaluar las tendencias existentes en lo que respecta al tamaño de cada una de esas poblaciones y, de ser posible, determinar los motivos de dichas tendencias.

ii) Examinar los mejores datos disponibles sobre el comercio de ambas especies, con inclusión de sus partes y derivados y, en la medida de lo posible, evaluar la repercusión que tiene dicho comercio en las poblaciones.

iii) Formular recomendaciones, para someterlas a la consideración de las Partes en la CITES, sobre el manejo global de cada población, a fin de lograr su mantenimiento a un nivel óptimo, y sobre la medida en que una explotación en granjas, en cautividad o en la naturaleza es compatible con ese manejo.

## SISTEMATICA DE LA TORTUGA MARINA

Las pocas características morfológicas superficiales que se han utilizado en la sistemática de las tortugas marinas quizá sean indicadores deficientes de la variación genética que se da en el grupo. La taxonomía específica e intraespecífica de las tortugas marinas, y del complejo Chelonia mydas en particular, constituye una base inadecuada para la elaboración de planes de manejo destinados a mantener un máximo de diversidad genética.

## BIOLOGIA DE LA TORTUGA MARINA

### Estimación del tamaño de la población

Con muy pocas excepciones, sólo se pueden utilizar parámetros mensurables en la playa de nidación (número de nidos, número de hembras emergentes) para hacer una estimación del tamaño de la población. La población que puede ser objeto de evaluación sólo representa una parte de la población de hembras maduras que anidan durante una temporada determinada. Dado que cuando las hembras migran de nuevo, lo hacen a intervalos de dos, tres o cuatro años, no es posible estimar de manera fidedigna el número total de hembras maduras.

En el caso de C. mydas, el número de hembras emergentes en una playa determinada de nidación puede variar de manera pronunciada de año en año, en uno o más múltiplos de diez. Ello podría ser reflejo de las condiciones del lugar de alimentación, es decir, el número de hembras que se han podido preparar a la puesta de huevos.

Mientras que C. mydas suele anidar en grupo, en partes limitadas de la playa, y a veces durante un período en que la nidada tiene un apogeo bien determinado, E. imbricata tiende a anidar de manera individual o en grupos reducidos en lugares dispersos, y en algunos casos durante una temporada larga y mal delimitada. Por consiguiente, es mucho más difícil de vigilar de manera continua el número de nidadas de esta última especie.

Por estos motivos, el "manejo" de las tortugas marinas se parecerá poco al "manejo" de, por ejemplo, los ungulados terrestres, en cuyo caso a veces es posible hacer un recuento de prácticamente toda la población local, así como determinar la edad, el sexo y el valor reproductivo de cada uno de los animales evaluados.

Filopatria y flujo genético

La tortuga verde se caracteriza por realizar largas migraciones entre el lugar de alimentación y las playas donde anida. Los programas de marcado han demostrado que las hembras tienden a regresar a la misma playa cada vez que anidan durante una misma temporada y cada vez que vuelven a migrar. En ello se basa principalmente la opinión de los biólogos especializados en la tortuga marina de que cada población reproductora constituye "una unidad independiente de reproducción que no fortalece a ninguna otra desde el punto de vista demográfico".

Existen algunos indicios de filopatria imperfecta, particularmente en el caso de una hembra que fue marcada mientras anidaba en Tromelin y encontrada nueve años más tarde en una playa de la isla de Europa. No hay prácticamente ninguna información sobre el desplazamiento de los machos, y ninguna indicación en absoluto de que las tortugas machos o hembras regresen a su playa de nacimiento para reproducirse. Es posible que el flujo genético entre las poblaciones sea menos significativo de lo que se suele pensar en general.

Pese a que la tortuga carey puede ser sedentaria en gran medida, y a que se ha demostrado que tiene cierto grado de filopatria, se tiene conocimiento de varios desplazamientos a larga distancia y se sabe poco acerca del grado de filopatria existente.

Período de maduración

Se ha observado que, en algunos lugares, la tortuga verde necesita de 25 a 50 años para llegar a la madurez; no se tiene conocimiento de que las tortugas carey sean significativamente diferentes, pero si el atraso en la maduración de C. mydas se debe, como se ha sugerido, al hecho de que la especie es exclusivamente hervíbora y a que, por lo tanto, se ve limitada en cuanto a su alimentación, cabría esperar que E. imbricata llegara a la madurez un poco más pronto.

En la práctica, la maduración tardía significa que la población actual y sus correspondientes tendencias son reflejo del número de animales que anidaban hace 25 a 50 años, y que los efectos de algunas formas de explotación o de algunas medidas de conservación podrían tardar igualmente unos 25 a 50 años en ponerse de manifiesto. Por una parte, la maduración tardía puede mitigar los efectos de una explotación excesiva, pero por otra, puede fomentarla, ya que es posible que sus efectos sean apenas perceptibles durante el período de vida de la generación humana responsable de ella.

## SITUACION EN MATERIA DE CONSERVACION

Gran parte, pero no la mayoría, de las poblaciones reproductoras de C. mydas están o se consideran agotadas o en disminución, y esa disminución sólo está bien documentada en una minoría de casos. En la mayoría de los casos, la disminución se atribuye, principalmente o en parte, a la explotación. Se tiene conocimiento de la desaparición de un reducido número de poblaciones, particularmente en las islas, después de que éstas fueran pobladas por el hombre. En este aspecto, al igual que en otros, se poseen menos conocimientos sobre E. imbricata. No se sabe de poblaciones que hayan sido eliminadas, aunque se sospecha que muchas de ellas están agotadas o en disminución, lo cual sólo puede documentarse de forma adecuada en unos pocos casos. La escasez global de la especie, en relación con C. mydas, puede ser una característica natural de la especie, o posiblemente el legado de varios siglos de explotación del carey.

En los cuadros que figuran a continuación se resumen algunos datos relativos a la población extraídos de los cuadros 149 y 150. Cabe reconocer que para recopilarlos fue necesario simplificar de manera considerable situaciones complejas, que con frecuencia se conocen mal, y emitir numerosos juicios de valor, pocos de los cuales pueden aceptarse a nivel universal. Se procura simplemente presentar desde una perspectiva amplia las poblaciones mundiales del complejo Chelonia mydas y de Eretmochelys imbricata. El término "unidades geopolíticas" incluye todas las zonas que se desglosan en los cuadros 149 y 150. Por ejemplo, se trata por separado las costas del Pacífico y del Golfo/Caribe, en el caso de México, y el territorio continental y las islas, en el de la India. Con ello se procura mejorar la precisión, ya que el número de unidades será más próximo al número total de poblaciones reproductoras que el número de países en los que anida la especie, pero aún hay imprecisiones considerables, como por ejemplo en el caso de Indonesia, que no se subdivide.

Cuadro 157. Resumen de ciertos datos sobre las poblaciones de la tortuga marina. En el punto 1 infra, la cifra superior indica el número de unidades en las que se sabe que la especie se reproduce con regularidad (todas aquellas que llevan los números 1 a 5 en la primera columna de los cuadros 149 y 150); la cifra inferior (entre paréntesis) toma en cuenta además todos los lugares donde es segura la existencia de nidadas, pero se desconoce su nivel, o donde son posibles pero no están confirmadas (todas las unidades que llevan el signo "?" en los cuadros mencionados anteriormente). Si bien es probable que la gran mayoría de las poblaciones que llevan el signo "?" sean pequeñas, se piensa que muy pocas de ellas, como por ejemplo Eretmochelys en Madagascar, son importantes a nivel regional o mundial. Por lo tanto, el número de poblaciones "significativas" será mayor que la cifra superior, pero considerablemente menor que la cifra inferior. La "indicación del número total de nidadas anuales" no es más que una indicación; se trata de aproximaciones de un orden de magnitud basadas en los datos disponibles, y no de estimaciones calculadas rigurosamente. Una población "importante" es, en el caso de C. mydas, una población en la que, según se sabe o se sospecha, anidan cada año entre 1.000 y 5.000 (o más) hembras y, en el caso de E. imbricata, entre 100 y 500 (o más).

| | C. mydas | E. imbricata |
|---|---|---|
| 1. Número de unidades geopolíticas que tienen poblaciones reproductoras (Unidades totales: 185) | 85 (140) | 54 (116) |
| 2. Indicación del número de nidadas anuales | 150.000 | 30.000 |
| 3. Número de unidades geopolíticas que tienen poblaciones importantes[1] | 22 | 22 |
| 4. Número de unidades geopolíticas que tienen poblaciones de gran tamaño y que no parecen estar significativamente agotadas[2] | 6-10? | ? |
| 5. Número de las que se sospecha que están agotadas o en disminución (con exclusión del Nº 6 infra) | 41 | 36 |
| 6. Número respecto de las que la disminución está bien documentada | 16 | 4 |
| 7. Número (de 5+6) cuya disminución puede atribuirse en gran medida o en parte a la explotación | 42<br>73,5% | 29<br>72,5% |
| 8. Número de unidades geopolíticas cuyas poblaciones reproductoras han sido efectivamente eliminadas | 6 | ninguna conocida |

Nota[1]: véase el cuadro 163. Nota[2]: en el caso de C. mydas éstas incluirían Queensland, Australia Occidental, Europa, Tromelin, el Yemen Democrático, las Galápagos, posiblemente también Nueva Caledonia (grupo de Entrecasteaux), Omán, Pakistán, y otros quizá, como Suriname y Ascensión. La información de que se dispone sobre Eretmochelys es insuficiente para deducir qué poblaciones, si las hay, podrían entrar en esta categoría.

Cuadro 162. Número de unidades geopolíticas que tienen poblaciones pertenecientes a cada uno de los tamaños de las clases, resumidas a partir de los cuadros 149 y 150. 0 = sin nidadas conocidas y con poca probabilidad de nidación significativa, ? = nidación segura o posible, pero no se dispone de más datos. En el caso de C. mydas, 1 = cada año anidan hasta 250 hembras, 2 = 250 - 1.000, 3 = 1.000 -5.000, 4 = 5.000 - 10.000, 5 = más de 10.000. Las cifras que van separadas por una barra (/) = población intermedia. En el caso de Eretmochelys, los límites numéricos de las clases 1 - 5 son diez veces menores.

| Tamaño de la clase | 0 | ? | 0/1 | 1 | 1/2 | 2 | 2/3 | 3 | 3/4 | 4 | 4/5 | 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C. mydas | 34 | 56 | 10 | 39 | 13 | 10 | 6 | 8 | 2 | 3 | 2 | 2 |
| E. imbricata | 59 | 63 | 9 | 11 | 12 | 8 | 1 | 13 | 4 | 3 | 0 | 2 |

Cuadro 163. Resumen de las poblaciones "importantes" en las que cada año anidan más de 1.000 hembras, en el caso de C. mydas, y más de 100, en el caso de E. imbricata.

### Chelonia mydas

Clase 3 (1.000 - 5.000): Ascensión; Comoras; Ecuador: Galápagos; Arabia Saudita: Golfo (?); Seychelles; Suriname; Pakistán; Filipinas. Cabe mencionar asimismo las poblaciones que figuran a continuación y que están "dentro de esos límites", así como aquellas cuyo tamaño no se conoce con exactitud pero que probablemente entran en esta categoría: Guinea Ecuatorial: Bioko (?); Malasia: Oeste; Malasia: Sabah; Maldivas; México: Pacífico, Papua Nueva Guinea; Reunión: Tromelin.

Clase 3/4: Reunión: Europa; Somalia (?).

Clase 4 (5.000 - 10.000): Australia Occidental; Nueva Caledonia; Omán.

Clase 4/5: Yemen Democrático, Costa Rica.

Clase 5 (más de 10.000): Queensland; Indonesia.

### Eretmochelys imbricata

Clase 3 (100 - 500): Brasil (?); B.I.O.T. (Océano Indico); República Dominicana; Egipto: Mar Rojo; Guinea Ecuatorial: Bioko (?), Granada (?), India: islas Andamán y Nicobar; Malasia: Sabh; Maldivas; Omán; Arabia Saudita: Mar Rojo; Sudán, Turcos y Caicos. Cabe señalar asimismo la siguiente población que entra dentro de estos límites: Malasia (Oeste).

Clase 3/4: República Islámica del Irán; Jamaica; México: Golfo y Caribe; Yemen Democrático.

Clase 4 (500 -1.000): Queensland, Australia Occidental, Islas Salomón.

Clase 5 (más de 1.000): Indonesia, Seychelles.

## FORMAS DE EXPLOTACION DE LA TORTUGA

### Recolección de huevos

Numerosos pueblos costeros practican la recolección de huevos de tortuga, pero sus efectos en las poblaciones reproductoras sólo pueden evaluarse cuando se han mantenido registros de recolección, normalmente relacionados con el arrendamiento o la venta de derechos de recolección (y en todos estos casos la recolección es atípicamente intensiva). La recolección de huevos en la isla Diamond(Birmania)

tiene una de las historias más largas y detalladas de todas las zonas de "pesca" de la tortuga; se dispone de datos correspondientes a 1883-1898 y 1977-1982. Durante este período, la producción de huevos (principalmente de C. mydas) se redujo de unos 2.000.000 a unos 200.000, lo cual indica que, como resultado de una recolección anual de huevos de más del 90 por ciento, el número de nidadas fue diez veces inferior, esto es, sólo se redujo un 2 por ciento aproximadamente cada año. No se capturaron tortugas regularmente en las aguas de Birmania, y en otros lugares (Sabah, Sarawak, etc.), con condiciones similares, se observó que la disminución se producía a un ritmo igualmente lento.

De ello se puede deducir que las tortugas marinas sufren de una mortalidad muy elevada durante y después de la eclosión, que posiblemente depende de la densidad, lo cual ha podido observarse en algunas oportunidades. Se puede alegar que la recolección de los huevos o de las crías constituye una mera desviación de las pérdidas que la población sufriría de todas formas debido a factores naturales. Al parecer, ello podría ser apoyado por el hecho de que una recolección de huevos de cerca del 100 por ciento durante más de un siglo, puede tener como resultado una reducción anual del 2-3 por ciento solamente del número de nidadas, y sugiere que una pequeña recolección de huevos podría ser sostenible a largo plazo, de no haber otros factores desfavorables. Sin embargo, el largo período de maduración de C. mydas significa que una recolección de huevos intensiva y destructiva es preferible, desde el punto de vista económico, a una recolección sostenida a más bajo nivel, y ello puede explicar por qué la recolección de huevos con fines comerciales ha tenido como resultado el agotamiento de las poblaciones reproductoras.

Captura de tortugas

En los casos en los que se dispone de información, es evidente que la captura, con fines comerciales, de tortugas que se encuentran en las playas de nidación o muy cerca de la costa ha tenido como resultado la disminución, rápida a veces, de las poblaciones de la tortuga, y ha ocasionado en algunas ocasiones la eliminación de la población reproductora local. Varios ejemplos documentados sugieren que ello puede considerarse cierto en general, y que cabe esperar que ocurra si, como parece ser el caso, la mortalidad natural de las tortugas adultas es muy reducida. A pesar de que una abundante población de tortugas puede estar representada por un número relativamente reducido de tortugas hembras en la playa de nidación, capturar a cada hembra que sale del agua para anidar es un método de recolección sencillo y eficaz, y también será el método más eficaz para agotar, y quizá para eliminar finalmente, la población.

El efecto de la obtención de tortugas en el mar no es fácil de evaluar. Cuando la captura parece realizarse principalmente con fines de subsistencia, como ocurre en el sudoeste de Madagascar, se pueden observar pocos indicios, o ninguno, de un agotamiento rápido de la población de que se trata. En otros casos, en que es de carácter más comercial, como en el de las tortugas del estrecho de Torres, en Papua Nueva Guinea, la captura intensiva puede ser motivo de preocupación. Si las tortugas obtenidas en el mar incluyen una proporción importante de subadultos y de machos, además de hembras, y como la eficacia de la captura suele ser menor que en las playas de nidación, es probable que ese método tenga un efecto menos inmediato y menos grave en las poblaciones de la tortuga. Sin embargo, dado que no es posible evaluar estas poblaciones en el mar, y como las tortugas se alimentan normalmente lejos del lugar donde anidan, es prácticamente imposible vigilar de manera continua y adecuada la captura en alta mar, para evitar que afecte desfavorablemente a la población.

La captura de la tortuga con fines comerciales ha sido responsable de todos los casos documentados de extinción de poblaciones de tortuga y, por lo tanto, es correcto considerar que causa daños inmediatos mayores que la caza de subsistencia. Sin embargo, se puede deducir de la inexistencia general de colonias de C. mydas en tierra firme, salvo en los casos en que la costa es de difícil acceso o en que las prácticas religiosas impiden el consumo de tortugas, que es posible que la caza de subsistencia en los últimos siglos haya eliminado algunas colonias existentes en el pasado, y haya tenido un efecto tan significativo como el reciente desarrollo de la captura con fines comerciales.

Cría en granjas

La cría en granjas significa que se recolectan huevos o tortugas juveniles en el medio silvestre para criarlos en cautividad durante el resto de su vida. En la medida en que la recolección sustituye meramente a los factores responsables de la mortalidad natural, tendrá pocos o ningunos efectos perceptibles en el número de especímenes de la población. Este método es preferible a la cría en cautividad en circuito cerrado ya que requiere el mantenimiento de poblaciones de tortuga en el medio silvestre, pero es potencialmente perjudicial porque implica en cierta medida, aunque muy pequeña, el retiro de animales de la naturaleza.

Entre las dificultades que, según se ha sugerido, plantea la cría en granjas con fines comerciales figuran: la necesidad de limitar las fuerzas comerciales, lo cual incluye una reducción de la escala de operaciones, que podrían llevar a un retiro excesivo de nuevas existencias del medio silvestre, y la necesidad de ejercer un control sobre la medida en que el comercio legal de productos obtenidos de la cría en granjas podría conducir a un mayor comercio ilegal. La utilización de procedimientos adecuados de etiquetado son cruciales en este último caso. Un reducido número de casos, todos ellos revelados en los Informes Anuales de CITES, demuestran que se ha aprovechado la existencia de suministros legales de productos de tortuga para encubrir el comercio ilegal.

Cría en cautividad

Si bien se ha propuesto el establecimiento de criaderos en circuito cerrado para suministrar productos de tortuga de manera independiente en relación con las poblaciones silvestres, no se han superado las dificultades que en la práctica supone la producción segura de una cantidad adecuada de tortugas. Hasta la fecha, ninguna tortuga concebida en cautividad se ha reproducido en cautividad. Si bien las operaciones de cría en cautividad han tenido como objetivo lograr una independencia con respecto a las poblaciones silvestres, se ha señalado que los programas de cría en granjas podrían ser preferibles, ya que en éstos se tendría interés en mantener una población silvestre sana como fuente de existencias.

## COMERCIO INTERNACIONAL

Chelonia mydas

La tortuga verde apareció en el comercio internacional en el siglo XVII, durante el período de la expansión colonial europea, inicialmente en forma de animales vivos, luego en forma de calipe (cartílago del caparazón utilizado para preparar sopa) y, muy recientemente como carne congelada. Europa se abastecía con tortugas provenientes del Caribe y el Océano Indico, y América del Norte, del Caribe y América Latina. El volumen del comercio internacional de productos comestibles de C. mydas

es ahora relativamente reducido, probablemente debido a los efectos que ha tenido la CITES y, además del comercio regional realizado por pescadores, ha incluido principalmente carne procedente de la Cayman Turtle Farm y de la granja de la Reunión, importada por el Reino Unido y Francia para la producción de sopa. El otro producto comercial importante de C. mydas es su piel, en bruto o curtida. El comercio de piel de tortuga se ha desarrollado desde el decenio de 1960, sea como objetivo principal de la explotación o como complemento del comercio de carne de tortuga, y el Japón, Francia e Italia absorben la mayor parte de la producción. Las importaciones del Japón aumentaron entre 1977 y 1982, año en que alcanzaron un nivel máximo de 20 toneladas, y luego se redujeron en cierta medida, debido a una mejor aplicación de la CITES; del mismo modo, las importaciones de Europa han disminuido después de que Francia e Italia retiraran sus reservas. El carey en bruto de C. mydas tiene poco valor, pero se comercializa un número considerable de tortugas embalsamadas o de caparazones pulidos, muchos de ellos destinados al Japón.

Al parecer, la aplicación de los controles de CITES es en parte la causa de la reducción del volumen mundial del comercio de productos de C. mydas, y su aplicación uniforme por los países de la CEE, que ha tenido como resultado el retiro de las reservas formuladas anteriormente por Francia e Italia, ha sido particularmente importante. Si bien actualmente el comercio internacional supone poco peligro para las poblaciones de C. mydas, hay varias excepciones que son motivo de preocupación: la exportación de pieles de México, Panamá e Indonesia; la exportación de huevos de Indonesia y Filipinas; la exportación de tortugas embalsamadas de Indonesia en cantidades comerciales, y como recuerdos para turistas en varios países.

Eretmochelys imbricata

La tortuga carey ha sido comercializada por su caparazón (carey) desde hace muchísimos años y, más recientemente, se ha registrado un rápido desarrollo de la comercialización de tortugas enteras embalsamadas, generalmente subadultas, con frecuencia destinadas al comercio turístico. Desde el siglo pasado, y hasta las últimas décadas, los principales mercados del carey se encontraban en Europa y América del Norte, donde se utilizaba para la fabricación de una variedad de artículos de lujo y objetos decorativos. La demanda de carey se redujo durante un tiempo, después de la llegada del plástico al mercado, pero volvió a aumentar vertiginosamente a partir del decenio de 1970, debido al incremento del consumo en el Japón, país que importa actualmente la mayor parte del carey comercializado a nivel mundial.

Siguen siendo objeto de comercio internacional cantidades muy importantes de E. imbricata; mientras que las importaciones de América del Norte y Europa son ahora insignificantes, debido en gran medida a la aplicación de la CITES, el comercio realizado con el Extremo Oriente, y el Japón en particular, se ha desarrollado con rapidez. Pese a que el Japón impuso un cupo voluntario de 30 toneladas de bekko (carey) al año, ello representa un volumen de comercio muy superior al registrado antes de 1973 y 1979, cuando las importaciones alcanzaron niveles máximos sin precedentes. A principios del decenio de 1980, cerca de la mitad de las importaciones del Japón procedían de Estados que son Parte en CITES, pero desde 1985, se han importado cantidades cada vez mayores de países que no son Parte en la Convención, particularmente Cuba, Haití, Jamaica, las Maldivas, las Salomón y Singapur. Así pues, parece que CITES no ha hecho que el Japón reduzca sus importaciones, sino que ha llevado a este país a buscar otros países abastecedores (aunque es probable que parte del carey proceda de las mismas poblaciones explotadas por los antiguos exportadores).

Los principales países que siguieron exportando carey después de su adhesión a la CITES son: Nicaragua, Panamá, Belice, Kenya, la República Unida de Tanzanía, Filipinas e Indonesia, aunque el volumen de las exportaciones de algunos de ellos han disminuido recientemente. Las exportaciones de Belice registraron un pronunciado aumento en 1985 y 1986, y hay indicios de que las estadísticas aduaneras del Japón subestiman considerablemente el volumen real del carey importado de Belice.

Las importaciones japonesas de carey constituyen una amenaza inmediata para las poblaciones de tortuga carey y representan 40.000 animales al año, como mínimo. La única forma de reducir esta amenaza sería que el Japón redujera considerablemente su consumo de carey. Si bien se ha hecho mucho hincapié en el empobrecimiento cultural que ocasionaría la restricción del uso tradicional de bekko en el Japón, el volumen que se consume actualmente es muy superior al nivel tradicional, y se han desplegado esfuerzos notables para desarrollar nuevos mercados para las joyas fabricadas con bekko entre los sectores jóvenes de la población. Se deberían reducir asimismo las importaciones de carey en otros países del Extremo Oriente, particularmente Taiwán y la República de Corea.

## CONSERVACION DE LA TORTUGA

La Estrategia Mundial para la Conservación de 1980 reconoció que los recursos naturales siempre han sido, y siempre deben ser, explotados con el objeto de contribuir a la supervivencia de la población humana. Así pues,el uso de recursos naturales, como las tortugas marinas, no necesita justificarse, y no puede haber motivos para tratar de reducir la utilización duradera de los recursos de tortugas. Sin embargo, la historia y los conocimientos que se tiene de las poblaciones actuales de la tortuga han demostrado que la explotación a largo plazo de las tortugas, particularmente la captura masiva de las hembras que se encuentran en su playa de nidación, tiende a traer como resultado una disminución de la población y puede acabar por eliminarlas a nivel local. Por consiguiente, lo que se requiere es evitar una explotación abusiva de los recursos naturales.

Pese a que los productos de la tortuga pueden constituir, y en algunos lugares siguen constituyendo, un importante elemento del régimen alimenticio, la cultura y la economía de los pueblos costeros, parece ser que actualmente, en muchos casos, las tortugas tienen muy poco valor nutritivo e importancia económica en relación con otros alimentos. Si la única preocupación fuera la rentabilidad económica, la teoría sugiere que sería preferible explotar hoy al máximo las tortugas e invertir los ingresos mañana en otras operaciones. Por lo tanto, la conservación de la tortuga se podría justificar mejor haciendo hincapié en motivos no comerciales y no utilitarios que en argumentos económicos simplistas.

Las tortugas son como las grandes ballenas; su biología hace que no sean adecuadas para una utilización comercial duradera, a menos que se apliquen medidas coercitivas severas para evitar que las fuerzas del mercado las lleven a la extinción.

Cuadro 149. Poblaciones reproductoras de Chelonia mydas: resumen de distribución, tamaño, tendencias y explotación. Véase la clave de símbolos que figura más abajo.

| | Población | | | | Explotación | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 Nidos | 2 Nos | 3 Tend. | 4 Efecto | 5 Adultos | 6 Nos | 7 Huevos | 8 Com. int. | 9 Tend. |
| ALBANIA | 0 | - | - | - | - | - | - | - | - |
| ARGELIA | ? | - | - | - | - | - | - | - | - |
| SAMOA EE.UU | 1- | - | d ? | - | M | 50 | ? | - | - |
| ANGOLA | (1) | - | d ? | - | ? | - | ? | - | - |
| ANGUILA | 0/1 | - | - | - | ? | - | - | - | i ? |
| ANTIGUA & BARBUDA | 1 | 39+ | - | - | M/H | 200 | - | - | - |
| ARUBA | 0/1 | - | d | - | M | 200 | - | i | - |
| ASCENSION | 3 | 1.6-3k | s ? | - | 0 | - | 0 | (E) | D |
| AUSTRALIA: | | | | | | | | | |
| QUEENSLAND | 5+ | 40k | s | - | H | 5-8k | L | - | - |
| TERR. NORTE | (1) | - | - | - | M/H | 2k | ? | - | - |
| AUSTR. OCC. | 4+ | - | - | - | L | 100? | ? | - | D |
| TERR. ISLAS | (1) | - | - | - | - | - | - | - | - |
| AZORES | ? | - | - | - | - | - | - | - | - |
| BAHAMAS | ? | - | - | - | M/H | - | ? | - | - |
| BAHREIN | 0 | - | - | - | 0? | - | - | i | - |
| BANGLADESH | ? | - | - | - | L? | - | H | - | - |
| BARBADOS | (1/2) | - | d | - | L | - | ? | - | d |
| BELICE | 1- | 20 | d | - | M | 350 | M | - | - |
| BENIN | ? | - | - | - | - | - | - | - | - |
| BERMUDAS | 0 | - | Ex | X | - | - | - | - | - |
| BRASIL | (2+) | - | d | - | H | 5k+ | ? | - | s |
| B.I.O.T. | 1/2 | 300 | - | - | 0 | - | 0 | (e) | D |
| ISLAS VIRG.BRIT. | 1 | 50-100 | - | - | H | 700 | ? | - | - |
| BRUNEI | 0 | - | - | - | - | - | - | i | - |
| BIRMANIA | (2) | - | D | X | L | 100? | vH | - | d |
| CAMBODIA | ? | - | - | - | ? | - | ? | - | - |
| CAMERUN | ? | - | - | - | - | - | - | - | - |
| ISLAS CANARIAS | 0 | - | - | - | - | - | - | - | - |
| IS. CABO VERDE | (1) ? | - | - | - | - | - | - | - | - |
| ISLAS CAIMAN | 0 | - | Ex | X | - | - | - | - | - |
| CHILE | ? | - | - | - | L | - | 0? | - | - |
| CHINA | (1/2-) | - | d | x | H | 1k+ | ? | - | d ? |
| COLOMBIA: | | | | | | | | | |
| PACIFICO | ? | - | - | - | ? | - | - | - | - |
| CARIBE | 1 | - | D | x | H | 2.5-3k | M | i | - |
| ISLAS COMORAS | 3 | 1.8+k | d | x | M | 200? | 0? | - | - |
| CONGO | ? | - | - | - | - | - | - | - | - |
| ISLAS COOK | ? | - | d | x | ? | - | M | - | - |
| COSTA RICA: | | | | | | | | | |
| PACIFICO | ? | - | - | - | L | - | H | - | - |
| CARIBE | 4/5 | 5-50k | s ? | - | M/H | - | M | (E) | D |
| CUBA | ? | - | d ? | - | H | 3k+ | L | - | d |
| CHIPRE | 1- | - | d ? | - | 0 | - | 0 | - | - |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DJIBOUTI | ? | - | - | - | ? | - | ? | - | - |
| DOMINICA | 0/1 | - | - | - | ? | - | ? | - | - |
| REP. DOMINICANA | 1/2 | 160-360 | d | x | MH | 500+ | - | e | - |
| ECUADOR: | | | | | | | | | |
| TIERRA FIRME | 1- | - | - | - | L | - | vL | e | - |
| GALAPAGOS | 3 | 1-3.5k | - | - | vL | - | 0? | - | D |
| EGIPTO: | | | | | | | | | |
| MEDITERRANEO | ? | | | | ? | | | | |
| MAR ROJO | 1 | 100 | - | - | ML | 300? | ? | - | - |
| EL SALVADOR | ? | - | - | d | L | - | H | - | - |
| GUINEA ECUAT.: | | | | | | | | | |
| TIERRA FIRME | ? | - | - | - | - | - | - | - | - |
| BIOKO | (2/3) | - | d | x | H | 2-2.5k | vH | (E) | - |
| ETIOPIA | (1) | - | - | - | M/H | - | - | - | - |
| ESTADOS FEDERADOS | | | | | | | | | |
| DE MICRONESIA | (1) | - | d | x | L | | ? | | |
| FIJI | (1) | | d ? | x | M | 300+ | M? | et | I |
| GUAYANA FRANCESA | 1 | 100 | | | L | 50? | L | | |
| POLINESIA FR. | 2 | 400-800 | D | x | L | - | L | t | D? |
| GABON | ? | - | - | - | ? | - | - | - | - |
| GAMBIA | ? | - | - | - | - | - | - | - | - |
| GHANA | ? | - | - | - | ? | - | ? | - | - |
| GIBRALTAR | 0 | - | - | - | - | - | - | - | - |
| GRECIA | 0 | - | - | - | - | - | - | - | - |
| GRANADA | 1 | 150-250 | - | - | H | 150 | H | t | - |
| GUADALUPE | ? | - | - | - | ? | - | - | - | - |
| GUAM | 1- | - | d ? | - | 0 | - | 0 | - | - |
| GUATEMALA: | | | | | | | | | |
| PACIFICO | ? | - | - | - | vL | - | H | - | - |
| CARIBE | ? | - | - | - | ? | - | ? | - | - |
| GUINEA | ? | - | - | - | - | - | - | - | - |
| GUINEA-BISSAU | ? | - | - | - | - | - | - | - | - |
| GUYANA | (1) | - | d ? | - | H | - | vH | - | - |
| HAITI | ? | - | - | - | ? | - | - | - | - |
| HAWAII | 1 | 180 | D-s ? | X | vL | - | 0 | - | D |
| HONDURAS: | | | | | | | | | |
| PACIFICO | ? | - | d | x | | - | - | - | - |
| CARIBE | ? | - | | - | MH | - | - | - | - |
| HONG KONG | 0 | - | Ex ? | - | - | - | - | - | - |
| INDIA: | | | | | | | | | |
| TIERRA FIRME | 1/2 | - | - | - | M | 3k+ | M/H | e | - |
| ISLAS ANDAMAN & NICOBAR | 1- | - | - | - | M | - | H | (e) | - |
| LAKSHADWEEP | 1- | | | | H | | H | | |
| INDONESIA | 5+ | 25-35k | D | X | vH | 25k+ | vH | E | I |
| IRAN | 1/2 | 150-500 | - | - | vL | - | M | - | - |
| IRAQ | ? | - | - | - | - | - | - | - | - |
| ISRAEL | 0 ? | - | Ex ? | - | L | - | L | (E) | d |
| ITALIA | 0 | - | - | - | - | - | - | - | - |
| COTE D'IVOIRE | ? | - | - | - | ? | - | - | - | - |
| JAMAICA | 1 | 100 | - | - | H | - | H | - | - |
| JAPON | 1+ | 200+ | D | x | - | - | - | I | - |
| JORDANIA | 0 | | | | | | | | |
| KENYA | 1 | 100-200 | d | x | M/H | - | H | (E) | d |
| KIRIBATI | (2) | | | | ? | - | ? | | |
| KUWAIT | 1- | 40- | - | - | 0? | - | 0? | i | - |
| LIBANO | 0 | - | - | - | - | - | - | - | - |
| LIBERIA | ? | - | - | - | M | - | - | - | - |
| LIBIA | 0 ? | - | - | - | - | - | - | - | - |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MACAO | 0 | – | – | – | – | – | – | – | – |
| MADAGASCAR | (1/2) | – | d | x | H | 7k? | M | – | – |
| MADEIRA | ? | – | – | – | – | – | – | – | – |
| MALASIA: | | | | | | | | | |
| MALASIA OCC. | 2/3 | ca 1k | d/s ? | | vL | | vH | | |
| SABAH | 2+ | 800-1k | D | X | vL | – | vH | I | D |
| SARAWAK | 2+ | ca 750 | D | X | vL | – | vH | I | D |
| MALDIVAS | 2/3 | .8-1.3k | D | X | MH | 1.5 k | M | – | – |
| MALTA | 0 | – | – | – | – | – | – | – | – |
| ISLANDS MARSHALL | (1) | – | d ? | – | ? | – | ? | T | – |
| MARTINICA | 0 | – | – | – | M/H | – | ? | i | – |
| MAURITANIA | (1) | – | – | – | M/H | – | – | – | – |
| MAURICIO: | | | | | | | | | |
| MAURICIO | 0 | – | Ex | – | – | – | – | – | – |
| RODRIGUES | 0 | – | Ex | – | – | – | – | – | – |
| ST BRANDON | 1/2 | 300 | d | x | M/H | 300+ | ? | – | – |
| MAYOTTE | 2 | 600- | d | x | H | – | – | – | – |
| MEXICO: | | | | | | | | | |
| PACIFICO | 2/3 | ca 1k | D | X | vH | | H | E | d |
| GOLFO/CARIBE | 2 | – | d | x | H | 400? | H | – | – |
| MONACO | 0 | – | – | – | – | – | – | – | – |
| MONTSERRAT | 0/1 | – | – | – | – | – | – | – | – |
| MARRUECOS | ? | – | – | – | – | – | – | – | – |
| MOZAMBIQUE | 1 | 200 | d | x | H | – | M/H | – | – |
| NAMIBIA | 0 | – | – | – | – | – | – | – | – |
| NAURU | 0 ? | – | – | – | – | – | – | – | – |
| ANTILLAS NEERL. | | | | | | | | | |
| SOTAVENTO | 1- | – | d | x | L | – | L | i | – |
| BARLOVENTO | 0/1 | – | d | – | L | – | – | – | – |
| NUEVA CALEDONIA | (4) | – | – | – | – | – | – | – | – |
| N. ZELANDIA & IS. | 0 | – | – | – | – | – | – | – | – |
| NICARAGUA: | | | | | | | | | |
| PACIFICO | ? | – | – | – | L | | H | | |
| CARIBE | 0 ? | – | – | – | M | 720? | H | (E) | D |
| NIGERIA | ? | – | – | – | – | – | – | – | – |
| NIUE | ? | – | – | – | – | – | – | – | – |
| MARIANAS SEPT. | 1- | – | – | – | M? | | t | i | |
| OMAN | 4 | 6k | – | – | M/H | 1k? | M | e | s? |
| PAKISTAN | 3+ | – | – | – | L | – | L | e | – |
| REPUBLICA PALAU | (1/2) | – | d | x | LM | – | M/H | t | – |
| PANAMA: | | | | | | | | | |
| PACIFICO | (1) | – | d | – | L | – | L | E | – |
| CARIBE | ? | – | | | HM | | L | E | |
| PAPUA N. GUINEA | (2/3) | – | d | x | M | 5k+ | M | t | I |
| PERU | (1-) | – | | | M | 2-3k | ? | | s? |
| FILIPINAS | 3 | – | D | X | H | – | M | E | D? |
| ISLAS PITCAIRN | 0 | – | – | – | – | – | – | – | – |
| PORTUGAL | 0 | – | – | – | – | – | – | – | – |
| PUERTO RICO | 0/1 | 4 | – | – | MH | – | MH | – | – |
| QATAR | ? | – | – | – | ML | – | M | – | – |
| REUNION: | | | | | | | | | |
| REUNION | 0 | | Ex | X | | | | | |
| EUROPA | 3-4 | 2-11k | s ? | – | 0 | – | * | (E) | D |
| TROMELIN | 2/3 | .7-1.3k | s ? | – | 0 | – | * | – | s |
| OTRAS ISLAS | 1 | – | i ? | – | ? | – | – | – | – |
| SANTO TOME & PRINCIPE | ? + | – | – | – | M/H | – | M/H | – | – |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ARABIA SAUDITA: | | | | | | | | | |
| MAR ROJO | 1/2 | — | — | — | L | — | LM | — | i? |
| GOLFO | 3- ? | — | — | — | L | — | L | — | — |
| SENEGAL | (1) | — | d | — | H | — | ? | — | — |
| SEYCHELLES | 3 | 3-4.7k | D | X | M | 500+ | L | (E) | d |
| SIERRA LEONA | ? | — | — | — | — | — | — | IE | — |
| SINGAPUR | 0 | — | — | — | — | — | — | — | — |
| ISLAS SALOMON | 1+ | — | — | — | ? | — | H | — | — |
| SOMALIA | (3/4) | — | d | x | H | 4k? | ? | (E) | — |
| SUDAFRICA | 0 | — | — | — | — | — | — | — | — |
| ESPA A | 0 | — | — | — | — | — | — | — | — |
| SRI LANKA | (1) | — | d | x | H | 3-5k | vH | — | — |
| STA. ELENA | 0 | — | — | — | L | 20-40 | L | — | — |
| S. CRIST., NIEVES | ? | — | — | — | ? | — | ? | (E) | — |
| STA. LUCIA | 0/1 | — | d | — | ? | — | — | — | — |
| SAN VICENTE | 0/1 | — | — | — | — | — | — | — | — |
| SUDAN | ? | — | — | — | L | — | H | — | D |
| SURINAME | 3 | 1.5-2k | s/i | — | — | — | — | — | — |
| SIRIA | 0 ? | — | — | — | — | — | — | — | — |
| TAIWAN | ? | — | — | — | M/H | 500? | 0? | — | d |
| TANZANIA | 1/2 | 200-300 | d | x | ? | — | vH | — | d |
| TAILANDIA | 2 | — | D | X | — | — | — | — | — |
| TOGO | ? | — | — | — | ? | — | ? | — | — |
| ISLAS TOKELAU | ? | — | d | x | ? | — | ? | — | — |
| TONGA | ? | — | d | x | H | 500? | ? | — | — |
| TRINIDAD & TABAGO | 0/1 | — | — | — | — | — | — | — | — |
| TUNEZ | ? | — | — | — | L | — | — | (E) | d |
| TURQUIA | (2) | — | D | X | L | — | ? | — | — |
| TURCOS Y CAICOS | 1 | 45-105 | — | — | — | — | — | — | — |
| TUVALU | ? | — | — | — | — | — | — | — | — |
| E.A.U. | ? | — | d | x | L | — | M/H | — | — |
| ESTADOS UNIDOS | 1 | 182 | D-i ? | X | 0 | — | 0 | (I) | D |
| EE.UU. VARIOS | | | | | | | | | |
| IS. PACIFICO | ? | — | — | — | ? | — | — | — | — |
| IS. VIRG. EE.UU. | ? | — | — | — | — | — | — | — | — |
| URUGUAY | 0 | — | — | — | M/H | 30-60 | M/H | t | i? |
| VANUATU | (1/2) | — | — | — | — | — | — | — | — |
| VENEZUELA: | | | | | | | | | |
| I. AVES | 1/2 | 200-300 | D | X | 0? | — | 0? | (E) | D |
| TIERRA FIRME | 0/1 | — | — | — | M/H | — | M/H | — | — |
| VIET NAM | ? + | — | — | — | ? | — | — | — | — |
| WALLIS & HORN | ? | — | — | — | — | — | — | — | — |
| SAHARA OCC. | ? | — | — | — | — | — | — | — | — |
| SAMOA OCC. | 0/? | — | — | — | M | — | — | — | — |
| YEMEN (NORTE) | ? | — | — | — | L | — | M | — | — |
| YEMEN (SUR) | 4/5 | 10k | — | — | L? | — | L | (E) | D |
| ZAIRE | ? | — | — | — | — | — | — | — | — |

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Clave

Columna 1. Tamaño de las clases de la población nidificante (hembras por año)

0 = sin nidadas conocidas y con pocas probabilidades de nidificación significativa; 1 = cada año anidan hasta 250 hembras; 2 = 250 - 1.000; 3 = 1.000 - 5.000; 4 = 5.000 - 10.000; 5 = más de 10.000. Ex = población local eliminada o prácticamente eliminada.

? = nidación segura o posible, pero no se dispone de más datos y es imposible clasificarla en un tamaño de clase; se sospecha que en la mayoría de tales casos hay un número reducido o muy reducido de nidadas; ? + = igual

que en el caso anterior, pero se sospecha que se trata de un lugar importante.

Números separados por una barra (/) = tamaño intermedio de las poblaciones; 0/1 = nidación prácticamente insignificante. Números del 1 al 4 que llevan el signo "-" = cercana al límite inferior del tamaño de la clase; que llevan el signo "+" = cercana al límite superior. Números que no están entre paréntesis = estimación relativamente fiable; números que están entre paréntesis = deducciones a partir de nuevos datos; cuando llevan el signo ? = indica una gran incertidumbre.

Columna 2. Estimación numérica de las nidadas anuales

Sólo se dan las estimaciones obtenidas directamente o las que se consideran fidedignas. "k" = en miles. El signo "-" indica que el número está en el límite superior, y el signo "+", que está en el límite inferior. Para más información, véanse los recuentos por países.

Columna 3. Tendencia aparente en cuanto al número de nidadas

Ello tiene por objeto dar una indicación general de las tendencias registradas en las últimas décadas. D = población agotada o en disminución, sobre la base de indicios relativamente fiables; d =se sospecha que la población está agotada o en disminución, pero sin disponer de indicios fiables al respecto; s = numero de nidadas relativamente estable durante el periodo sobre el que se dispone de datos (ello puede ocultar tendencias demográficas subjacentes supuestas y por ende no indica necesariamente la existencia de una población estable); i = en aumento; d/s = las fuentes o los indicios discrepan; el signo "?" indica incertidumbre. No ha sido posible representar fluctuaciones locales o a corto plazo, y sólo en raras ocasiones se ha podido distinguir las tendencias históricas de las que se han puesto de manifiesto en estos últimos años. En este último caso, d/s representaría los indicios de una disminución numérica seguida de una estabilidad.

Columna 4. Efecto de la explotación

X = la explotación se considera seriamente como una causa principal de la disminución documentada o sospechada de la población; x = la explotación parece ser una causa de la disminución, o se ha dicho que lo es, pero sin haber indicios fiables, o es una de las varias causas posibles.

Columna 5. Nivel de explotación de especímenes adultos

0 = nulo; L: bajo; M: moderado; H = elevado; ? = se piensa que hay explotación, pero no se conoce con precisión su nivel.

Columna 6. Evaluación cuantitativa de la captura de adultos

k = en miles

Columna 7. Nivel de recolección de huevos

0 = nulo; L = bajo; M: moderado; H: elevado; ? = se piensa que hay recolección, pero no se conoce con precisión su nivel.

vH = recolección del 90 - 100%, * = crías retiradas para cría en granjas.

Columa 8. Comercio internacional

E = exportación; I = importación; T = comercio turístico; las minúsculas significan que hay un comercio de menor importancia; los paréntesis significan que hubo comercio en el pasado, pero que ya no se practica.

Columna 9. Tendencias de los niveles de explotación

D = disminución debida a medidas de protección; d = disminución causada principalmente por una menor abundancia de tortugas; i = incremento; s = se piensa que el nivel de captura se ha mantenido más o menos constante.

Cuadro 150. Poblaciones reproductoras de Eretmochelys imbricata: resumen de distribución, tamaño, tendencias y explotación. Véase la clave de símbolos que figura más abajo.

| | Población | | | | Explotación | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 Nidos | 2 Nos | 3 Tend. | 4 Efecto | 5 Adultos | 6 Nos | 7 Huevos | 8 Com. int. | 9 Tend. |
| ALBANIA | 0 | - | - | - | - | - | - | - | - |
| ALGERIA | 0 | - | - | - | - | - | - | - | - |
| SAMOA EE.UU. | ? | - | d ? | - | ? | - | ? | - | i? |
| ANGOLA | 0 | - | - | - | - | - | - | - | - |
| ANGUILA | ? | - | d ? | ?- | L | - | - | - | - |
| ANTIGUA & BARBUDA | 2 | 76 + | - | - | H | 250 | - | et | - |
| ARUBA | 0/1 | - | d ? | - | ? | - | - | - | - |
| ASCENSION | 0 | - | - | - | - | - | - | - | - |
| AUSTRALIA: | | | | | | | | | |
| QUEENSLAND | (4+) ? | - | - | - | L | - | H | (E) | - |
| TERR. NORTE | ? | - | - | - | - | - | - | - | - |
| AUSTR. OCC. | (4) ? | - | - | - | ? | - | ? | - | - |
| TERR. ISLAS | ? | - | - | - | - | - | - | - | - |
| AZORES | 0 | - | - | - | - | - | - | - | - |
| BAHAMAS | (2) | - | - | - | H | - | ? | e | - |
| BAHREIN | 0 | - | - | - | - | - | - | - | - |
| BANGLADESH | ? | - | - | - | - | - | - | - | - |
| BARBADOS | 0/1 | - | - | - | L | - | ? | e | d |
| BELICE | 2- | - | - | - | H | 360 | M | E | I |
| BENIN | 0 | - | - | - | - | - | - | - | - |
| BERMUDAS | 0 | - | - | - | - | - | - | - | - |
| BRASIL | (3) | - | - | - | M/H | 1k+ | ? | - | - |
| B.I.O.T. | 3 | 300 | - | - | 0 | - | 0 | (e) | D |
| IS. VIRG. BRIT. | 2 | 25-75 | - | - | M/H | 400 | H | t | - |
| BRUNEI | 0 | - | - | - | - | - | - | - | - |
| BIRMANIA | (2) ? | - | d | x | ? | - | vH | e? | s |
| CAMBODIA | ? + | - | - | - | ? | - | ? | (e) | - |
| CAMERUN | ? | - | - | - | - | - | - | - | - |
| ISLAS CANARIAS | 0 | - | - | - | - | - | - | - | - |
| IS. CABO VERDE | ? | - | - | - | M | - | M/H | - | - |
| ISLAS CAIMAN | - | - | - | - | M/H | - | - | E | D? |
| CHILE | 0 | - | - | - | - | - | - | - | - |
| CHINA | 0 ? | - | - | - | ? | - | I ? | - | - |
| COLOMBIA: | | | | | | | | | |
| PACIFICO | ? | - | - | - | - | - | - | - | - |
| CARIBE | (2) ? | - | D | X | M/H | .3-1k | ? | e | - |
| ISLAS COMORAS | 1/2 | 50 - | - | - | ? | - | ? | e | - |
| CONGO | 0 | - | - | - | - | - | - | - | - |
| ISLAS COOK | ? | - | - | - | ? | - | ? | - | - |
| COSTA RICA: | | | | | | | | | |
| PACIFICO | ? | - | - | - | - | - | - | - | - |
| CARIBE | (1/2) | - | D | X | ? | - | L | e | D? |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CUBA | ? | - | - | - | H | 3k+ | L | E | I |
| CHIPRE | 0 | - | - | - | - | - | - | - | - |
| DJIBOUTI | ? | - | - | - | ? | - | ? | - | - |
| DOMINICA | (1) | - | - | - | ? | - | - | e | - |
| REP. DOMINICANA | 3 + | 240-600 | d | x | ? | - | - | E | - |
| ECUADOR: | | | | | | | | | |
| TIERRA FIRME | (1) | - | - | - | L | - | L | - | - |
| GALAPAGOS | 0 | - | - | - | 0 | - | 0 | - | - |
| EGIPTO: | | | | | | | | | |
| MEDITERRANEO | 0 | - | - | - | - | - | - | - | - |
| MAR ROJO | 3 | 200-500 | - | - | ? | - | L | - | - |
| EL SALVADOR | ? | - | - | - | ML | - | H | - | - |
| GUINEA ECUAT.: | | | | | | | | | |
| TIERRA FIRME | ? | - | - | - | - | - | - | - | - |
| BIOKO | (3) | - | d | x | H | - | vH | e? | - |
| ETIOPIA | ? | - | - | - | ? | - | - | - | - |
| ESTADOS FEDERADOS | | | | | | | | | |
| DE MICRONESIA | (1/2) | - | D | X | L | - | ? | T | - |
| FIJI | ? | - | d | x | M | - | ? | ITe | i |
| GUAYANA FRANCESA | 0/1 | - | d ? | - | L | - | - | - | - |
| POLINESIA FR. | ? | - | - | - | L | - | - | - | - |
| GABON | ? | - | - | - | ? | - | - | - | - |
| GAMBIA | 0 | - | - | - | ? | - | - | t? | - |
| GHANA | ? | - | - | - | - | - | - | - | - |
| GIBRALTAR | 0 | - | - | - | - | - | - | - | - |
| GRECIA | 0 | - | - | - | - | - | - | - | - |
| GRANADA | (3) ? | - | - | - | H | 200+ | H | t | - |
| GUADALUPE | ? | - | - | - | ? | - | - | e? | - |
| GUAM | 0/1 | - | - | - | - | - | - | - | - |
| GUATEMALA: | | | | | | | | | |
| PACIFICO | 0 ? | - | - | - | - | - | - | - | - |
| CARIBE | ? | - | - | - | ? | - | ? | - | - |
| GUINEA | ? | - | - | - | ? | - | - | - | - |
| GUINEA-BISSAU | ? | - | - | - | - | - | - | - | - |
| GUYANA | (1) | - | d ? | - | H | - | vH | - | - |
| HAITI | ? | - | - | - | H | - | - | E | I |
| HAWAII | (1+) | - | - | - | 0 | - | 0 | - | - |
| HONDURAS: | | | | | | | | | |
| PACIFICO | ? | - | d ? | x | - | - | - | E | - |
| CARIBE | ? | - | - | - | MH | - | - | - | - |
| HONG KONG | 0 | - | - | - | - | - | - | IE | - |
| INDIA: | | | | | | | | | |
| TIERRA FIRME | 0/1 | - | - | - | ? | - | L | (e) | D |
| ISLAS ANDAMAN & NICOBAR | 3 | - | - | - | M | - | H | - | - |
| LAKSHADWEEP | ? | - | - | - | H | - | H | e | - |
| INDONESIA | 5++ | - | d | ? | vH | - | vH | E | I |
| IRAN | 3/4 | 300-1 K | - | - | L | - | M | - | - |
| IRAQ | 0 | - | - | - | - | - | - | - | - |
| ISRAEL | 0 | - | - | - | - | - | - | - | - |
| ITALIA | 0 | - | - | - | - | - | - | - | - |
| COTE D'IVOIRE | 0 | - | - | - | ? | - | - | - | - |
| JAMAICA | (3/4)? | 300 ? | - | - | H | - | H | E | - |
| JAPON | ? | - | - | - | - | - | - | I | - |
| JORDANIA | 0 | - | - | - | - | - | - | - | - |
| KENYA | 2 | 50 | d | x | H | - | ? | E | i |
| KIRIBATI | ? | - | - | - | ? | - | ? | - | - |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| KUWAIT | ? | - | - | - | 0 | - | 0 | - | - |
| LIBANO | 0 | - | - | - | - | - | - | - | - |
| LIBERIA | 0 | - | - | - | - | - | - | - | - |
| LIBIA | 0 | - | - | - | - | - | - | - | - |
| MACAO | 0 | - | - | - | - | - | - | - | - |
| MADAGASCAR | ? ++ | - | d-s? | X | H | 3k | M | ET | d |
| MADEIRA | 0 | - | - | - | - | - | - | - | - |
| MALASIA: | | | | | | | | | |
| MALASIA OCC. | 2/3 | - | d ? | x | L | - | vH | - | - |
| SABAH | 3- | - | d/s ? | x | L | - | H | (E) | - |
| SARAWAK | (1) ? | - | d ? | x | L | - | H | i | - |
| MALDIVAS | 3 | 100-500 | d | x | H | 5k | M | E | I |
| MALTA | 0 | - | - | - | - | - | - | - | - |
| ISLAS MARSHALL | ? | - | d ? | - | ? | - | ? | Ti | - |
| MARTINICA | ? | - | - | - | ? | - | ? | - | - |
| MAURITANIA | ? | - | - | - | - | - | - | - | - |
| MAURICIO: | | | | | | | | | |
| MAURICIO | 0 | - | ? | - | - | - | - | - | - |
| RODRIGUES | 0 | - | ? | - | - | - | - | - | - |
| ST BRANDON | 0 | - | ? | - | L | - | - | - | - |
| MAYOTTE | 1- | - | - | - | - | - | - | - | - |
| MEXICO: | | | | | | | | | |
| PACIFICO | ? | - | d | x | L | - | - | - | - |
| GOLFO/CARIBE | 3/4 | 480+88 | d | x | M | - | ? | - | - |
| MONACO | 0 | - | - | - | - | - | - | - | - |
| MONTSERRAT | 0/1 | - | - | - | ? | - | - | - | - |
| MARRUECOS | ? | - | - | - | - | - | - | - | - |
| MOZAMBIQUE | ? + | - | - | - | M/H | - | M/H | - | - |
| NAMIBIA | 0 | - | - | - | - | - | - | - | - |
| NAURU | 0 ? | - | - | - | - | - | - | - | - |
| ANTILLAS NEERL. | | | | | | | | | |
| SOTAVENTO | 1 ? | - | d | x | L | - | - | t | - |
| BARLOVENTO | 0/1 | - | d | - | - | - | - | - | - |
| NUEVA CALEDONIA | ? | - | - | - | - | - | - | - | - |
| N. ZELANDIA & IS. | 0 | - | - | - | - | - | - | - | - |
| NICARAGUA: | | | | | | | | | |
| PACIFICO | ? | - | - | - | L | - | ? | - | - |
| CARIBE | (1/2) | - | d | x | ?H | - | vH | E | d? |
| NIGERIA | 0 | - | - | - | - | - | - | - | - |
| NIUE | ? | - | - | - | - | - | - | - | - |
| MARIANAS SEPT. | 0 | - | - | - | ? | - | L | t | i |
| OMAN | 3+ | 400 | - | - | vL | - | M/L | - | - |
| PAKISTAN | 0 | - | - | - | - | - | - | - | - |
| REPUBLICA PALAU | ? | - | d/s | x | L | - | H | T | i |
| PANAMA: | | | | | | | | | |
| PACIFICO | ? | - | - | - | - | - | - | - | - |
| CARIBE | (1/2) | - | d | x | H | - | ? | E | - |
| PAPUA N. GUINEA | ? + | - | d ? | x | L | - | M | t(E) | - |
| PERU | 0 | - | - | - | - | - | - | - | - |
| FILIPINAS | (1/2) | - | d | x | H | - | M | E | - |
| ISLAS PITCAIRN | 0 | - | - | - | - | - | - | - | - |
| PORTUGAL | 0 | - | - | - | - | - | - | - | - |
| PUERTO RICO | 1/2 | 22 + | - | - | MH | - | MH | - | - |
| QATAR | (1) | - | d | - | ? | - | ? | - | - |
| REUNION: | | | | | | | | | |
| REUNION | 0 | - | ? | - | - | - | - | - | - |
| EUROPA | 0 | - | - | - | - | - | - | - | - |
| TROMELIN | 0 | - | - | - | - | - | - | - | - |
| OTRAS ISLAS | 1 | - | - | - | - | - | - | - | - |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| SANTO TOME & PRINCIPE | ? + | - | - | - | H | - | M/H | E | - |
| ARABIA SAUDITA: | | | | | | | | | |
| MAR ROJO | 3 | - | - | - | L | - | L | - | - |
| GOLFO | ? | - | - | - | L | - | L | i | - |
| SENEGAL | ? | - | - | - | H | - | ? | t | - |
| SEYCHELLES | 5 | 1-1.8 K | d | X | H | 500 | L | E | D |
| SIERRA LEONA | ? | - | - | - | - | - | - | - | - |
| SINGAPUR | 0 | - | - | - | - | - | - | EI | - |
| ISLAS SALOMON | 4 - | - | D | X | ? | - | H | E | i |
| SOMALIA | ? | - | - | - | ? | - | ? | - | - |
| SUDAFRICA | 0 | - | - | - | - | - | - | - | - |
| ESPA A | 0 | - | - | - | - | - | - | - | - |
| SRI LANKA | ? | - | d | x | ? | - | vH | - | - |
| STA. ELENA | 0 | - | - | - | - | - | - | - | - |
| S. Crist., NIEVES | ? | - | - | - | L | - | L | e? | - |
| STA.LUCIA | (1) | - | d | - | ? | - | L | E | - |
| SAN VICENTE | (1/2) | - | d | x | L | - | L | - | - |
| SUDAN | 3 + | - | d ? | x | - | - | - | - | - |
| SURINAME | 1 | - | - | - | 0 | - | L | - | - |
| SIRIA | 0 | - | - | - | - | - | - | - | - |
| TAIWAN | ? | - | - | - | - | - | - | - | - |
| TANZANIA | 2- | 50 | d | x | ? | - | ? | EI | - |
| TAILANDIA | (1/2)- | - | d | - | ? | - | vH | e? | d |
| TOGO | 0 | - | - | - | - | - | - | - | - |
| ISLAS TOKELAU | ? | - | - | - | ? | - | ? | - | - |
| TONGA | ? | - | - | - | ? | - | ? | - | - |
| TRINIDAD & TABAGO | ? | - | - | - | H | - | ? | e | - |
| TUNEZ | ? | - | - | - | - | - | - | - | - |
| TURQUIA | 0 | - | - | - | - | - | - | - | - |
| TURCOS Y CAICOS | 3 | 125-275 | - | - | - | - | - | e | - |
| TUVALU | 0 ? | - | - | - | - | - | - | - | - |
| E.A.U. | ? | - | - | - | ? | - | ? | - | - |
| ESTADOS UNIDOS | 0/1 | 2 | - | - | - | - | - | - | - |
| EE.UU. VARIOS | | | | | | | | | |
| IS. PACIFICO | ? | - | - | - | - | - | - | - | - |
| IS. VIRG. EE.UU. | 1/2 | 25 | - | - | ? | - | - | - | - |
| URUGUAY | 0 | - | - | - | M | 30-60 | M | - | - |
| VANUATU | ? | - | - | - | - | - | - | - | - |
| VENEZUELA: | | | | | | | | | |
| ISLAS | (1/2) ? | - | - | - | - | - | - | - | - |
| TIERRA FIRME | 0/1 | - | - | - | L | - | L | - | - |
| VIET NAM | ? + | - | - | - | ? | - | ? | - | - |
| WALLIS & HORN | ? | - | - | - | - | - | - | - | - |
| SAHARA OCC. | ? | - | - | - | - | - | - | - | - |
| SAMOA OCC. | 1/2 | - | d | x | H | - | H | - | d |
| YEMEN (NORTE) | ? | - | - | - | L | - | ? | - | - |
| YEMEN (SUR) | 3/4 | 500 | - | - | L | - | L | - | - |
| ZAIRE | 0 | - | - | - | - | - | - | - | - |

Clave

Columna 1. Tamaño de las clases de la población nidificante (hembras por año)

0 = sin nidadas conocidas y con pocas probabilidades de nidificación significativa; 1 = cada año anidan hasta 25 hembras; 2 = 25 - 100; 3 = 100 - 500; 4 = 500 - 1000; 5 = más de 1000. Ex = población local eliminada o prácticamente eliminada. Nota: los límites numéricos de estos tamaños de clases son diez veces inferiores a los correspondientes a C. mydas (Cuadro 149)

Números separados por una barra (/) = tamaño intermedio de las poblaciones; 0/1 = nidación prácticamente inexistente. Números del 1 al 4 que llevan el signo "-" = cercana al límite inferior del tamaño de la clase; que llevan el signo "+" = cercana al límite superior. Números que no están entre paréntesis = estimación relativamente fiable; números que están entre paréntesis = deducciones a partir de nuevos datos; cuando llevan el signo ? = indica una gran incertidumbre.

"?" = nidación segura o posible, pero no se dispone de más datos y es imposible clasificarla en un tamaño de clase; se sospecha que en la mayoría de tales casos hay un número reducido o muy reducido de nidadas; "? +" = igual que en el caso anterior, pero se sospecha que se trata de un lugar importante (o "++" = muy importante).

Columna 2. Estimación numérica de las nidadas anuales

Sólo se dan las estimaciones obtenidas directamente o de otras fuentes fiables. "K" = en miles. El signo "-" indica que el número está en el límite superior, y el signo "+", que está en el límite inferior. Para más información, véanse los recuentos por países.

Columna 3. Tendencia aparente en cuanto al número de nidadas

Ello tiene por objeto dar una indicación general de las tendencias registradas en las últimas décadas. D = población agotada o en disminución, sobre la base de indicios relativamente fiables; d =se sospecha que la población está agotada o en disminución, pero sin disponer de indicios fiables al respecto; s = numero de nidadas relativamente estable durante el periodo sobre el que se dispone de datos (ello puede ocultar tendencias demográficas subjacentes supuestas y por ende no indica necesariamente la existencia de una población estable); i = en aumento; d/s = las fuentes o los indicios discrepan; el signo "?" indica incertidumbre. No ha sido posible representar fluctuaciones locales o a corto plazo, y sólo en raras ocasiones se ha podido distinguir las tendencias históricas de las que se han puesto de manifiesto en estos últimos años. En este último caso, d/s representaría los indicios de una disminución numérica seguida de una estabilidad.

Columna 4. Efecto de la explotación

X = la explotación se considera seriamente como una causa principal de la disminución documentada o sospechada de la población; x = la explotación parece ser una causa de la disminución, o se ha dicho que lo es, pero sin haber indicios fiables, o es una de las varias causas posibles.

Columna 5. Nivel de explotación de especímenes adultos

0 = nulo; L: bajo; M: moderado; H = elevado; ? = se piensa que hay explotación, pero no se conoce con precisión su nivel.

Columna 6. Evaluación cuantitativa de la captura de adultos

k = en miles

Columna 7. Nivel de recolección de huevos

0 = nulo; L = bajo; M: moderado; H: elevado; ? = se piensa que hay recolección, pero no se conoce con precisión su nivel.

vH = recolección del 90 - 100%.

Columa 8. Comercio internacional

E = exportación; I = importación; T = comercio turístico; las minúsculas significan que hay un comercio de menor importancia; los paréntesis significan que hubo comercio en el pasado, pero que ya no se practica.

Columna 9. Tendencias de los niveles de explotación

D = disminución debida a medidas de protección; d = disminución causada principalmente por una menor abundancia de tortugas; i = incremento; s = se piensa que el nivel de captura se ha mantenido más o menos constante.

d = la captura legal de tortugas en los departamentos franceses de las Antillas; el vasto comercio ilegal de productos de tortuga importados; la importación continua y oficialmente sancionada de carey de E. imbricata y errores aparentemente graves de los informes anuales de CITES.

## Situación de Chelonia mydas y Eretmochelys imbricata desde el punto de vista biológico y comercial

### EVALUACION DE LAS PROPUESTAS RELATIVAS A LA TRANSFERENCIA DE LAS POBLACIONES INDONESIAS DE CHELONIA MYDAS Y DE ERETMOCHELYS IMBRICATA DEL APENDICE I AL APENDICE II

1. Las propuestas no contienen ninguna información acerca del tamaño de las poblaciones indonesias a pesar de que se han realizado numerosos estudios en los últimos años y de que, por consiguiente, se dispone de muchos datos útiles.

2. En las propuestas no figura ninguna indicación de las tendencias de las poblaciones, con lo cual no se demuestra que ha habido una recuperación. Las pruebas de que se dispone revelan que el número de C. mydas nidificantes se ha mantenido en algunos lugares en los últimos años, pero se redujo seriamente en varios otros, y que en general se estima que las existencias están disminuyendo en el país. Respecto de E. imbricata se dispone de información menos cuantificada pero, sobre la base principalmente de deducciones y anecdótas, se estima que las existencias también están disminuyendo.

3. El potencial para las transacciones con fines comerciales es sumamente elevado, y existen pruebas evidentes de que los intereses comerciales han conseguido que se ignoren las restricciones impuestas sobre el comercio en virtud de la Convención desde que Indonesia suscribió dicho instrumento.

4. Existen indicaciones claras de que las autoridades se muestran cada vez más decididas a controlar el comercio ilegal de los últimos años y de que se comprometen cada vez más a manejar las poblaciones de tortugas marinas.

5. Sean cuales fueren los métodos de gestión que puedan traer consigo las presentes propuestas en beneficio de las tortugas marinas, no responden en modo alguno a los criterios (Conf. 1.1 y conf. 1.2) estipulados para la transferencia de poblaciones del Apéndice I al Apéndice II, y por consiguiente, las propuestas deberían ser rechazadas en esta oportunidad.

## Assessment of the proposals to transfer the Indonesian populations of Chelonia mydas and Eretmochelys imbricata from Appendix I to Appendix II

The Republic of Indonesia has submitted two proposals concerning sea turtles to the 6th meeting of the Conference of the Parties to CITES. The two proposals are for the transfer of Indonesian populations of Chelonia mydas and Eretmochelys imbricata from Appendix I to Appendix II.

The stated aim of both proposals is to phase out the current trade in turtles harvested from the wild and eventually replace it with controlled trade in captive-reared specimens. Legal export, by members of the Indonesia Fauna and Flora Trade Association (IFFTA), will be within quotas "strictly controlled by PHPA". The major management prescriptions, common to both proposals, are to:

(i) reduce legal egg harvest to 30% of the production of each population (each "major" population, in the case of the E. imbricata proposal);

(ii) supply demand for turtle products from captive-reared (ranched) stock derived from the 30% legal egg harvest.

The E. imbricata proposal states that egg collection will be under PHPA supervision, and that any of the quota remaining may be used for consumption; presumably this would be the case for C. mydas also, although it is not so specified. The 70% of eggs not harvested "will remain protected" (C. mydas proposal); the E. imbricata proposal specifies that protection will be in situ or in hatcheries.

Additional measures comprise:

(iii) prohibition of turtle harvest within a certain distance of the nesting beach; "within 20 km of any nesting beach" in the case of C. mydas, "within 10 km of any major nesting beach" in the case of E. imbricata;

(iv) control of turtle trade by licensing (domestic trade is specified in the C. mydas proposal);

(v) prohibition of sale of turtle meat in public eating places (C. mydas proposal only);

(vi) limit turtles landed at Bali to a curved carapace length of between 60 and 85 cm (C. mydas proposal only).

These proposals will be considered from two points of view: firstly, to what extent do they constitute a useful outline management programme for Indonesian turtle populations; secondly, to what extent do they fulfil the criteria defined by CITES for the transfer of populations from Appendix I to Appendix II?

Whilst the 'Berne Criteria' (Conf. 1.1 and 1.2) are accepted as the ordinary basis for amendments to the appendices of CITES, the fifth meeting of the Conference of the Parties evolved a set of 'Special Criteria' (Conf. 5.21) to act as a temporary means of allowing species incorrectly listed in Appendix I to be transferred to Appendix II, and to be traded in under a quota system.

In addition, the third meeting of the Conference of the Parties adopted a Resolution on Ranching (Conf. 3.15), which made provision for the transfer from Appendix I to Appendix II of populations considered no longer to be endangered and to allow trade in captive-reared specimens derived therefrom.

Because no reference is made in the Indonesian proposals to Conf. 5.21 or Conf. 3.15, it is here assumed that the proposals are being made in relation to the Berne Criteria alone, and, with regard to CITES, they will be assessed on that basis.

Do the proposals include beneficial management elements?

Recent reviewers of sea turtle conservation and management in Indonesia (Anon, 1984c; Schulz, 1984, 1987) have been unanimous in recognising excessive egg harvest as a major cause of decline and the most pervasive primary threat to nesting populations. When, as in many parts of Indonesia, a near complete harvest of eggs is combined with intense hunting of turtles, populations are likely to decline to virtual insignificance; recruitment to the mature population may already be critically low at some sites. In these circumstances, a reduction in egg harvest to 30% of eggs laid, and a prohibition on the taking of turtles in the region of the nesting beach, would, if carried out, constitute two of the most important management steps that could be taken; both these measures are incorporated in the Indonesian proposals.

With regard to C. mydas in particular, recent analysts (Anon, 1984c; Schulz, 1984) have clearly defined the acute threat posed by the Bali turtle trade to populations of this species that lie within reach of the Bali trade network; this comprises almost the entire territory of Indonesia. The Indonesian C. mydas proposal incorporates three (probably the three most important) of the several recommendations made in Anon (1984c) in respect of the Bali trade, specifically: a ban on turtle hunting near nesting beaches, a ban on sale of turtle meat at public eating places, and a ban on harvest of C. mydas below 60 and above 85 cm curved carapace length. Other suggestions, not incorporated, were: a ban on the penning of turtles prior to shipment or sale, a ban on turtle slaughterers owning turtle boats (designed to prevent a wealthy few monopolising the trade), a ban on trade of this species through Ujung Pandang (an export centre), a quota for numbers used for traditional religious ceremonies, and a procedural requirement that all turtles landed at Bali come to a single site where a rigorous monitoring programme be operated.

Overlooking, for the moment, the exceptional difficulties faced in enforcing the control required throughout Indonesian territory, the proposals clearly incorporate many of the basic conservation measures necessary to counter the negative pressures that have been exerted on Indonesian sea turtle populations in recent decades. The practical and bureaucratic problems involved may not be quite as insuperable as might be suspected; Schulz (1987) notes his impression that local government officials are now in general more aware of 'the sea turtle problem', also the evidence of more effective control of the export trade by PHPA, and of increasing committment to training in turtle management practices.

Do the proposals meet the Berne Criteria?

The Berne Criteria, as embodied in documents Conf. 1.1 and 1.2, state that transfer of populations from Appendix I to Appendix II requires:

> "...positive scientific evidence that the plant or animal can withstand the exploitation resulting from the removal of protection...Such evidence should include at least a well documented population survey, an indication

of the population trend of the species, showing recovery sufficient to justify deletion, and an analysis of the potential for commercial trade in the species or population".

The wording of the last sentence quoted above, from Conf 1.2, is ambiguous. While the entire paragraph from which it is extracted is apparently concerned with criteria for deletion or transfer, the sentence quoted actually specifies the kinds of evidence that must be presented to justify deletion alone; the implication, not explicit, seems to be that the same evidence must be provided for transfer of species or populations. We have taken the wording in this latter sense, presuming it to be the sense intended.

The specified minimal requirements of Conf 1.2 will be considered in turn, taking both proposals together.

"a well documented population survey"

Under the 'Population' section, the C. mydas proposal states "the size and location of each population in Indonesia is not known". This is followed by one sentence giving an estimate of total breeding female numbers and a list of the principal breeding sites. The E. imbricata proposal states only "exact numbers unknown".

A number of surveys have been carried out, which in general, but not exclusively, attempt to assess the approximate size and relative importance of nesting populations by means of available egg collection figures; however, apart from the single sentence mentioned above, the results of these surveys are not presented in the proposals. The source of the information in the sentence that is presented is not cited. In our opinion the proposals do not include sufficient evidence of a well documented population survey; this is despite the fact that survey evidence, mainly carried out as part of the recently-concluded IUCN/WWF Project 3108, is actually available. None of the reports from this project (prepared for the PHPA) (see Schulz, 1984; Salm and Halim, 1984; Anon, 1984c) is cited in the proposals, although the estimate of total breeding females given in the C. mydas document appears to be derived from the project's work.

"an indication of the population trend...showing recovery..."

The available evidence (reviewed in the INDONESIA account appended) indicates that populations of C. mydas and E. imbricata in Indonesia are, in general, declining, although numbers appear to have been maintained at some sites in recent years. For the former species, the evidence is as well-quantified, comprehensive and compelling as might reasonably be expected; for the latter, it is based mainly on inference and anecdotal evidence, and is accordingly less conclusive. There is no evidence whatsoever for an increase in nesting numbers in any population of either species.

The Indonesian proposals provide no indication of population trends, and no suggestion of recovery of depleted populations.

"an analysis of the potential for commercial trade..."

Both proposals review briefly the existing utilisation of, and trade in, C. mydas and E. imbricata. According to the proposals there were 'legal' International exports in 1985 of 7609 E. imbricata plus 8,000 kg of shell (probably representing over 13,000 individuals in total), and 11,264 specimens of C. mydas (presumably mainly stuffed animals). As both species are at

present on Appendix I, no exports of such a clearly commercial nature can be regarded as 'legal' under CITES regulations. Although the proposals record significantly lower numbers in earlier years, trade volumes are clearly high, and almost certainly too high for such harvests to be sustainable, given the evidence for declining turtle populations in Indonesia. Indonesia acceded to CITES at the end of 1978 and substantial quantities of turtle products have been exported since 1980. The issuing of a valid export permit by PHPA (the CITES Management Authority in Indonesia) would imply, given the terms of the Convention, that the export is not for primarily commercial purposes and that PHPA considers such exports not to be detrimental to the survival of the species concerned. The evidence available suggests that neither condition has been met. It would appear that the potential for commercial trade is extremely high, and that in practice, commercial interests have allowed the trade controls intended under CITES to be circumvented.

Both proposals put forward a number of considerations, almost identical in each case, as justification for the suggested amendments to the appendices. These, quoted from the Chelonia mydas proposal, are listed below (original wording retained but some spellings changed where clearly in error), along with comments thereon.

(i) "The reason of the inclusion of the species into Appendix I was mainly to avoid further exploitation in the wild."

No comment.

(ii) "There are strong indications that continuous harvests from the wild still operating illegally and the evidences that a number of specimens are still taken might be an indication that the wild population is able to tolerate a certain degree of harvest."

The critical word here is "tolerate". Harvesting would theoretically be possible until virtually no turtles are left, but a population in decline can not be said to be tolerating harvest. "A certain degree" of harvest might be possible, but it is suggested only that, given the evidence for extirpation and depletion of Indonesian nesting populations, a harvest even approaching its present level cannot be sustainable in the long term. It should also be noted that populations nesting outside Indonesian territory are being harvested in Indonesian waters, and so possible deleterious effects of harvesting would be spread over a number of populations breeding in neighbouring countries and would be correspondingly difficult to discern.

(iii) "Several habitats of the species are already protected under the status of Conservation areas".

The C. mydas proposal states that there are nest beaches within 21 protected areas; however, of these only P. Sangalaki (in the Berau area of north-east Kalimantan) and Sukamade beach (in Meru Betiri N.P.) are known to be major nest beaches; protection was reported to be non-existent at the former in 1984, but commendably good at the latter (Schulz, 1984, 1987). Similarly, very few of the sites mentioned for E. imbricata are known to be of major importance for the species. There is an urgent need to exert management control over all sites that have been identified as major nest sites. Certain foraging grounds appear to be within protected areas, but the relative importance of these is not clear.

(iv) "The total ban on its harvest from the wild so far could not support the main goal of its previous inclusion into Appendix I".

No comment.

(v) "A limited and controlled harvest by down-listing the species into Appendix II has a better chance to reduce the ongoing uncontrolled harvests".

Indonesia has continued to export large quantities of sea turtle products, both illegal, and 'legal' with PHPA permits, since its accession to CITES in 1978. In essence, the international trade has been almost uncontrolled - although significant advances have been made in very recent years, as Schulz (1987) stresses - and it is rather difficult to envisage how formally relaxing harvest and trade restraints will actually reduce the impact on wild turtle populations, given that it has been impossible to police the present partial restrictions.

(vi) "The mentioned measures obviously will gain at least two benefits i.e. financial benefit for the proponent (which until recently was taken only by illicit traders) and a wider public support toward the conservation of the species and other conservation efforts in the country".

Significant financial benefit may well accrue to the proponent, although without a financial analysis of the costs involved in monitoring of nest beaches by PHPA, and in enforcement of the licensed trade system proposed, the magnitude of this cannot be assessed. The extent of public support for the proposals is also difficult to predict, without information on the nature of their involvement.

## Additional comments

The key to the feasibility of the proposed management regime, in essence common to both proposals, is the ability of the PHPA to restrict the proportion of eggs harvested to 30 % of the total production, and adequately to control export of turtle products. There are subsidiary requirements to prevent hunting of turtles within a given distance of the nesting beach, and, in the case of C. mydas alone, to limit the size range of turtles landed at Bali and to prohibit sale of meat in public eating places.

An objective assessment of the situation prevailing in the recent past leads to serious doubts as to the ability of the authorities to exercise the necessary controls. Both proposals state "Indonesia is a large country with 13,667 islands and long, open, maritime boundaries" and both admit "Total control over all islands and all of the maritime boundary is near impossible. Hence smuggling is rife and a difficult problem to solve" (quoted from C. mydas proposal). Neither proposal gives any indication of how PHPA will be able to exert effective control over egg harvesting in these very difficult circumstances. The fact that, according to all recent evidence (Schulz, 1984, 1987) egg harvest is near 100% throughout Indonesia would make its reduction to 30% an exceedingly difficult task, even without the geographic problems involved.

It is possible that the intention is to so restrict egg harvest only on certain beaches, and, presumably, to allow harvest to continue on others. The E. imbricata proposal does indeed state that the 30% quota will operate on "major" beaches, but no such specification is made for C. mydas; given the diffuse nesting habits of E. imbricata, it would be very difficult to define 'major' beaches, although considerably easier in the case of C. mydas.

Egg harvesting provides both a valuable food resource to local people, and a source of revenue to the local administration from the leasing of collection rights. Such local interests would presumably conflict to a great extent with PHPA requirements. The potential problems are well illustrated by the fact that, according to Schulz (1984), the egg contractor at Pangumbahan is sufficiently powerful to be able to restrict access by PHPA staff to the nesting beach. Similarly, although Pulau Sangalaki has been a Wildlife Reserve since 1982, the first PHPA official was only posted there in late 1984, at which time he had no transportation and no power; the local administration continued to lease egg collection rights without regard for the Central Government legislation (Schulz, 1984). Further, some of the past irregularities in turtle trade have seemingly been attributable to complicity between PHPA staff and exporters (Anon, 1984c).

Although, according to both proposals, legalised international trade will be restricted to quotas "strictly enforced" by PHPA, no details are provided of how quotas will be set, nor of how PHPA procedures will be upgraded to allow full control to be exercised.

Many of the mature turtles harvested within Indonesian territory will certainly be turtles that breed elsewhere but utilise foraging grounds in Indonesian waters. Turtles tagged on beaches in Australia, Papua New Guinea and Sabah have been killed in Indonesia (turtles from Sarawak have reportedly also been recorded). The Australian nesting populations of C. mydas include the largest remaining anywhere in the world, yet some Australian populations are probably being harvested to excess by fisheries operating on their feeding grounds in Indonesia (also in Papua New Guinea, Vanuatu and New Caledonia) (Limpus and Fleay, 1983). The international background to the Indonesian turtle fishery, although far from being well-quantified, is certainly significant and should be taken into consideration along with management options for populations actually nesting in Indonesia.

The ranching operations proposed appear in principle to provide a satisfactory means for supply of turtle products to the export trade, although it is impossible adequately to assess their feasibility in the absence of information on a number of critical parameters. These include: the means to be taken to enforce the 30% egg harvest; the number, location and planned management of the beaches from which eggs will be collected; the planned operation of the licensing and quota systems specified; and the time scale involved in replacing the current wild harvest with captive-reared stock.

## Recommendations

Overall, it is clear that, whatever beneficial management practices they might entail for turtle populations, the present proposals by the Republic of Indonesia for the transfer of their populations of C. mydas and E. imbricata from Appendix I to Appendix II of CITES do not in any respect meet the criteria (Conf. 1.1 and 1.2) laid down for such transfers to be adopted, and should thus be rejected on this occasion.

In order for adequate assessment to be made, future proposals should contain the following elements:

> A suitable presentation of the results of fieldwork already undertaken, combined with results of work that should be carried out in parts of the country at present inadequately covered, together adequately summarising information on the distribution and relative importance of nesting sites of the species concerned.

A discussion of the means to be taken to implement the suggested reduction of egg harvest to 30%, together with evidence of a management plan for nesting beaches on which egg harvesting will take place.

A discussion of the ranching, licensing and quota systems proposed, with details of husbandry techniques, planned productivity, enforcement plans and means of setting quotas, and a time schedule for the substitution of wild caught turtles by ranched stock.

## Situación de Chelonia mydas y de Eretmochelys imbricata desde el punto de vista biológico y comercial

### EVALUACION DE LAS PROPUESTAS RELATIVAS A LA TRANSFERENCIA DE LAS POBLACIONES INDONESIAS DE CHELONIA MYDAS Y DE ERETMOCHELYS IMBRICATA DEL APENDICE I AL APENDICE II

1. No se puede considerar ninguna transferencia de las poblaciones de C. mydas de Europa y Tromelín al Apéndice II de CITES a menos que las islas estén incluidas en el territorio cubierto por la aprobación francesa de la Convención.

2. Las poblaciones de C. mydas de Europa y Tromelín son importantes, problablemente estables y bien protegidas en las zonas de reproducción. El único peligro significativo para ellas se debe a la explotación de las zonas de alimentación en las proximidades de Madagascar y Mauricio.

3. La captura de los juveniles para la cría en granjas no parece tener un efecto considerable sobre la población de tortugas. Es probablemente la forma menos perjudicial de explotación de la tortuga que se ha descubierto hasta la fecha.

4. La operación de cría en granjas trae consigo pocos beneficios directos para las poblaciones silvestres de tortugas, y son pocos los que se pueden prever porque ya están bien protegidas. Es importante que esto no se utilice, per se, como argumento para rechazar la propuesta relativa a la cría en granjas.

5. Al autorizar el comercio de los productos de la cría en granjas, los principales efectos perjudiciales serían las complicaciones cada vez mayores para aplicar los controles CITES, ya que se sentaría un precedente al introducir la única existencia legal de productos de tortuga. Por consiguiente, es necesario velar por la aplicación de controles sumamente estrictos.

6. Existen indicaciones claras de que el nivel actual de control del comercio de productos de tortuga en toda Francia no es adecuado ni mucho menos. Son particularmente preocupantes las continuas recolecciones legales de tortugas en los departamentos franceses del Caribe; el comercio ilegal generalizado de productos importados de tortuga; la continua importación oficialmente sancionada de caparazón de E. imbricata y los aparentes graves errores en los informes anuales CITES.

7. Siempre y cuando se puedan abastecer los mercados dentro de la CEE, existen pocos justificativos económicos para solicitar la transferencia al Apéndice II, puesto que no será posible suministrar productos provenientes de la cría en granjas a Japón a menos que Francia tenga la intención de no tomar en consideración las recomendacions de la resolución Conf. 5.16.

## Assessment of the proposal to transfer the populations of Chelonia mydas of Europa and Tromelin from Appendix I to Appendix II

Conf. 3.15 sets out the conditions under which local populations of Appendix I species which are being ranched can be transferred to Appendix II. The proposal will be assessed on this basis.

In order to be eligible for transfer, the population must "occur within the jurisdiction of Parties" and must be "deemed by the Parties to be no longer endangered and to benefit by ranching".

The question of jurisdiction is important, because although Europa and Tromelin are undoubtedly controlled and administered by France, a Party to CITES, they appear not to be covered by the French approval of CITES. Thus it would theoretically be possible for turtles to be exported to countries not Party to CITES without contravening the Convention, although there is no indication that this might be contemplated, and it would be illegal under the local legislation currently in force (Arrêté No. 1989/DG/01, 1983). Furthermore, even if the proposal to transfer the C. mydas populations of Europa and Tromelin to Appendix II were to be successful, it would not be possible to import hatchlings to Réunion under the terms of Resolution 5.16, which recommends that Parties do not accept an import of a product unit of a ranched population from non-Party states. It may be that this is a trivial point resulting from a simple omission when France approved CITES, but the long-term future of the islands has a bearing on the conservation of turtles. The islands belong to a group, geographically spread out around the coasts of Madagascar, but politically united under the title of the Iles Eparses.

Another problem concerns the status under E.E.C. legislation: the Iles Eparses are not part of the Department of Reunion and are therefore not in the E.E.C. Since 1 January 1984, it has been illegal under E.E.C. Regulation 3626/82 to import CITES Appendix I material to the E.E.C. for commercial purposes. It would therefore appear that all import of hatchlings from the Iles Eparses to Réunion from 1984 onwards has been in contravention of this regulation.

To demand that turtle populations be "no longer endangered" is akin to asking the question "when did you stop beating your wife?" It begs the question that the populations were endangered at one stage. In the case of Tromelin, this is far from certain. As far as is known, the nesting population has never been exploited except by occasional shipwrecked sailors. The island is extremely remote, exposed and difficult to land on. However, turtles nesting on Tromelin are known to migrate to feeding grounds off Madagascar, Mauritius and St. Brandon, all of which are subject to fairly severe turtle hunting, and so the population is exploited, but the effect of this is not known. Nesting numbers on Tromelin have only been monitored since 1973 and, allowing for the normal fluctuations in numbers, no trends are discernable. In fact, the nesting density is so high that it would be possible to argue that the use of the nesting beaches is approaching capacity in peak years, suggesting that little, if any, population decline has taken place. Assuming that protection will continue to be given to Tromelin, and that the effects of ranching will not be detrimental (see below), the chief continuing threat to the population is the exploitation on the feeding grounds. The current effects of this may not be very great, but it is not possible to guarantee that levels of exploitation may not be stepped up in future.

In the case of Europa, the island is less remote and there is a short history of turtle exploitation in the early decades of this century and the latter part of the last, though the extent or effect of this is not fully known. Nesting numbers have been monitored since 1973 and have fluctuated very widely. Once again, it is not possible to discern any short-term trends, although Pritchard (1982c) concluded that it was probably recovering, and included it as the first of only three populations of C. mydas which fell into this category. King (1982) singled out the populations of Europa, Tromelin and the Iles Glorieuses as three out of only four C. mydas populations "not now declining, and which seem not to be threatened with extinction". Hughes (1971b) reported that "not inconsiderable" numbers of nests were destroyed by females nesting later in the season, and interpreted this as an indication that the population was at capacity and might even benefit from exploitation. However he admitted that it had not proved feasible to estimate the number of nests destroyed. Fretey (1976) reported a lower level of nest destruction which he considered less significant. As with Tromelin, the females which nest on Europa are known to migrate to feed off Madagascar, Mauritius and Mozambique, where they are hunted. Hunting off Madagascar is entirely for subsistence use and local trade, and this has probably been taking place for centuries. Although its effects cannot be assessed, there are no indications that it is exerting undue pressure on the nesting populations of Europa and Tromelin; in general, hunting of turtles at sea tends to be less deleterious than hunting on, or just off, the nesting beaches.

The extent to which the nesting populations of Europa and Tromelin can be considered isolated management units has considerable bearing on the validity of this proposal. The migratory nature of the turtles and their exploitation on the feeding grounds has already been discussed, but interchange in breeding populations also needs to be assessed. Previous tagging returns in other parts of the world have failed to demonstrate any interchange between different nesting populations of C. mydas, leading Carr and Stancyk (1975) to conclude that "each nesting colony is therefore a separate reproductive unit that does not demographically reinforce any other. Protection for the Tortuguero population, for example, has no beneficial effect whatever on that at Ascension Island, or any other colony." If this is correct, then improved protection on Europa and Tromelin will have no effect in reinforcing turtle populations elsewhere in the Indian Ocean, and the nesting populations can be treated as separate management units, provided the effects of exploitation on the feeding grounds are monitored. Serological studies of Western Atlantic Green Turtles by Smith et al. (19??) support this view, and caused them to recommend that "from a management point of view, sea turtles should be viewed as a series of populations". However, some short-distance shifts are known, and recent tagging work at the Iles Eparses has demonstrated that a female, first tagged nesting on Tromelin in 1973, was recovered nesting on Europa nine years later (Le Gall and Hughes, in press). This is the only recorded instance of a long-distance shift in breeding site for any marine turtle and, if it is more than an isolated phenomenon, it has profound implications for turtle conservation. It implies that the populations nesting on the Iles Eparses might serve as a reservoir which could naturally repopulate depleted nesting populations elsewhere in the region. The frequency of such interchange between nesting populations requires further investigation, but is probably sufficiently low to be able to treat local nesting populations separately.

The other requirements of Conf. 3.15, for the transfer of populations to Appendix II are effectively covered under six headings, which must be addressed in the proposal and which will here be considered in turn:

i) evidence that the taking from the wild shall have no significant detrimental impact on wild populations.

The proposal does contain some relevant evidence, but the significance of the direct impact rests on three factors: the mode of collection of hatchlings, the quantities collected, and the likelihood that the regulations on collection will be observed.

The only form of collection which is permitted is the collection of hatchlings which emerge during the hours of daylight. Such hatchlings, it is argued, suffer near-total predation by frigate-birds Fregata, and only those hatchlings which emerge at night escape without human intervention. It is difficult for one who has not witnessed the emergence of hatchlings and the resultant frigate predation to assess the validity of this claim, because there appear to be few quantified scientific observations on which to base a judgement. Hughes (1971b) reported 100% mortality in a batch of 133 hatchlings which emerged while he was watching and concluded that "only groups emerging very close to the sea, or in conjunction with another nest, or nests, can avoid, or partly avoid, the frigates". Fretey (1976) considered that on Europa "more than 99% of the young turtles are thus destroyed during the summer" but thought that frigate predation was less (20-50%) during the winter. The normal collection procedure is to locate the emerging hatchlings by means of a gathering flock of frigate-birds, and as the collection is carried out exclusively during the summer months, it seems reasonable to conclude that it has no perceptible effect on natural turtle recruitment, provided it is carried out according to the regulations laid down. This form of exploitation is probably the least damaging way of taking turtles from the wild that has yet been devised. Mrosovsky (1983) pointed out that a certain percentage of turtle eggs could safely be harvested, particularly if an attempt were made to harvest "doomed" nests laid too close to the sea. However, a small percentage of even supposedly doomed nests may survive, whereas it appears that none of the hatchlings emerging by day in the summer would naturally reach the sea.

The quantities of hatchlings collected is essentially irrelevant assuming that none would naturally survive. However, the total numbers collected have so far represented only between 1 and 6% of the estimated hatchling production on Tromelin and less than 1.1% on Europa (Table 5 of the proposal). The table does contain a serious bureaucratic error as it indicates that the total collection for 1981-82 was only 5062, while Table 7 indicates that the farm received 10,705 hatchlings in the same year. The quantities of hatchlings collected are so small that they would probably have no detectable effect on turtle recruitment even if they were randomly collected throughout the 24 hours. The proposal states that the maximum permitted offtake will not exceed 15,000 hatchlings a year. If such an offtake were to coincide with a low nesting year (producing about 2 million hatchlings), it would constitute less than 1% of the total hatchling production, assuming that the harvest were spread between Europa and Tromelin. The practice in recent years appears to have been to collect most of the hatchlings from Tromelin, primarily for logistic reasons. Frazier (1984) commented that this was not appropriate in view of the much larger nesting population on Europa, and suggested that the collection quotas be set separately for the two islands.

The effectiveness of strict regulations on the collection of hatchlings depends on how well they are enforced. At the moment, protection on the Iles Eparses appears to be exemplary, due chiefly to the fact that they are only populated by military and meteorological personnel and visited only by official aircraft. All collection is carried out under the control of the station commander by station personnel who are entirely separate from the farm, and who therefore have no reason to contravene the regulations.

Many of the general problems associated with the disputed stimulation or suppression of trade in wild turtle products by ranched supplies have been discussed earlier, but there are several points specific to the French proposal which must be examined. Green Turtles have many different commercial products, and it is necessary to assess each one independently. Meat is both the main product by weight and also the most difficult to transport and handle as it requires chilling or other forms of preservation. On Réunion itself there was very little existing market for turtle meat prior to the introduction of farmed products, simply because there were very few turtles caught. Only very occasionally was a turtle caught accidentally by a fisherman, and some of these may have been sold to hotels. To a restaurateur or hotelier, one of the chief attractions of farmed turtle meat is the continuity of supply and consistent quality. The only advantage of buying a poached turtle, if one could be obtained, might be a slightly lower price. However the supply of farmed meat is so large in relation to the possible supply of wild animals that it is most unlikely to pose any increased threat to wild turtles around Réunion. A possible, more important threat might be the introduction of turtle meat to international tourists who had previously never tasted it. They might then be more inclined to demand turtle meat when visiting other countries which allowed a wild harvest of turtles. Conversely, if ranched turtle products were adequately marked, and the marking were to be combined with a public education programme, then this might have a beneficial effect in making tourists aware of the need to avoid buying wild turtle products.

The question of exported turtle meat is more difficult to assess as there are far more variables involved. On a global scale, it is clear that the Réunion ranch on its own, will never make a significant impact on reducing the demand for wild turtle meat because the total quantity of wild meat consumed is several orders of magnitude greater than the potential supply of ranched product. However this is too simplistic a view as most turtle meat consumed never reaches the commercial domestic market, let alone the export market. It should be noted that the export of all edible animal products is generally better controlled than for non-edible material because it is usually subject to veterinary or public health control in addition to any measures implemented under CITES.

Turtle shell is the other main product of the ranch on Réunion, either in the form of whole, polished carapaces, or for use as a raw material in the manufacture of jewellery or other decorative objects. The whole carapaces undoubtedly supply the same type of market as the carapaces of wild turtles (both C. mydas and Eretmochelys imbricata), although they are distinguishable from both to the trained eye. At present, carapaces are sold mainly individually to tourists, who often then export them when they return home. There are two defects in the current implementation of the regulations which give cause for concern: the first is that French Customs do not control the import or export of personal possessions valued at less than FF1000, in spite of their obligations under CITES to do so.

The transfer of ranched populations to Appendix II without thereby endangering wild populations remaining on Appendix I depends largely on the ability to control trade adequately under CITES. There are strong indications that the degree of control on trade in turtle products in France may not be adequate to ensure this:

1. The Overseas Departments of France, Réunion, Guadeloupe, Martinique and French Guiana, are the only territories included within the EEC where C. mydas and E. imbricata occur regularly, and hunting of wild turtles is permitted for a least part of the year in the Caribbean

Departments. France therefore represents the only legal source of wild turtle products within the EEC. It has repeatedly been stressed that the Overseas Departments of France are politically part of France and that import controls do not operate between Departments. Martinique and Réunion therefore bear the same political relationship to each other as two mainland Departments. Under these circumstances there must be a danger of confusing ranch-reared and wild-caught turtle products legally acquired within France. The standards of control of trade in wildlife in French Guiana are said to be abysmal (Villalba Macias, 1987), and Martinique was reported to have the highest level of turtle exploitation anywhere in the Lesser Antilles (Carr et al., 1982).

2. In spite of having withdrawn its reservations on sea turtles on 1.01.1984, CITES Annual Reports indicate that France has continued to import wild-caught turtle shell as follows:

| | | |
|---|---|---|
| 1984 | E. imbricata | 215 kg shell from Cuba |
| 1985 | Cheloniidae | 30 kg shell from Haiti |
| | E. imbricata | 75 kg shell from Cuba |
| | | 60 kg shell from Fiji |
| | | 40 kg shell from Tanzania |

Much of this shell is used in the manufacture of spectacle frames and jewellery which is freely on sale in France (Le Serrec, 1987). The shell was apparently granted import permits on the "paramedical" grounds because it is used to make frames which are non-allergenic (Blanchard, pers comm.). This is not a valid excuse under the terms of CITES (and a similar excuse could be applied to allow trade in rhino horn).

3. There are substantial quantities of manufactured turtle products imported to France, mainly from the Far East, which are not recorded in the French CITES Annual Report and are freely on sale in French shops (Le Serrec, 1987). Stuffed E. imbricata and lampshades made from C. mydas shell imported from the Orient were even on sale in Réunion in January 1987 along with E. imbricata jewellery imported from Madagascar. The import and sale of such material is illegal under Arrêté No. 1985/DAE/CE 1983; the authorities were aware of the sale, but claimed that no action could be taken as the Arrêté contained no sanctions which could be applied against traders (Salvadori, pers. comm.). Some of the Oriental products were said to have been imported to Réunion from Metropolitan France, and thus could not be detained by Customs Authorities in Réunion.

4. The French CITES Annual Report for 1985 indicates the export to Japan and Australia of turtle soup made from C. mydas meat, said to have originated in the UK, probably here meant to indicate the Cayman Islands. The tins of soup, manufactured in France and also on sale in Paris, bear no indication on their labels of the origin of the turtles. The Cayman Islands have reported exporting no turtle meat to France, although some could have entered via the UK. The main company which makes turtle soup in France, Rougier, claims that all of the turtle meat used comes from Réunion (Le Serrec, 1987) and that none has been imported from the Cayman Islands since 1979. Rougier reports that during 1985 it exported soup to Austria and Japan. The French CITES Annual Report would therefore appear to contain an omission if not a deliberate falsification. There is no evidence that any turtle soup was imported to Australia, and it seems likely that the French

export report confused the ISO code for Australia (AU) with that for Austria (AT). Until the ranching proposal has been accepted, the Réunion turtles remain in Appendix I, and therefore cannot legally be exported; it is therefore possible that the origin was declared as UK, indicating "Cayman Islands" as this was thought to be the only "legal" source of C. mydas. The Cayman Turtle Farm is not an approved captive-breeding operation registered as such with the CITES Secretariat. Therefore any import of meat to the E.E.C. from the Cayman Islands contravenes CITES Resolution Conf. 4.15. Thus, even if the soup really was made from Cayman Island turtles, its export would still contravene CITES.

5. French Customs regulations do not permit the control of personal items having a value of less than FF 1000. This means that tourists returning to France with products made from sea turtles cannot be detained, no attempt is made to control or monitor the export of small tourist items from Réunion, and no E.E.C Certificates are issued for such items. Under the present conditions, this possibly stimulates a demand amongst tourists for carapaces, which is known to threaten turtle populations elsewhere in the world, and increases the difficulties of Customs authorities in importing countries in controlling the import of wild-caught turtle carapaces. French tourists were mentioned as being one of the few European nationalities still to be buying turtle souvenirs in Indonesia (Schulz, 1987).

ii) An assessment of the likelihood of the biological and economic success of the operation.

The proposal does contain an assessment of both biological and economic success. On the biological side, the ranch has been operating since 1978 with relatively few technical problems. There has been little disease except in 1981, and in other years the annual mortality has not been high in comparison with most commercial intensive farming operations. The proposal states that most of the mortality occurs in the first year of life; in the years in which hatchlings have been obtained, the mortality, expressed as a percentage of the number of hatchlings acquired, has varied from 77% in 1981 to 7% in 1984 (Table 7 of the proposal). Some of the reported "losses" actually represent selective killing of slow-growing and under-performing turtles; so the unintentional mortality is lower. The ranch has experienced problems with dermal necroses, but the cause of at least some of these has been traced to nutrition, and has been partially corrected. The remaining necroses are less extensive than those previously reported and do not appear to be contributing significantly to mortality of the older animals. They do reduce the value of the leather, which would have a bearing on the economic success, but for the fact that the leather is not at present used.

The economic success of the farm is assessed in the proposal chiefly by means of three tables (8, 9 and 10). It is difficult to evaluate these satisfactorily, but the farm appears to have made a profit in 1985 and 1986, mainly by diversifying its activities to include the admission of tourists. Without this source of income, it is estimated that the farm could break even at an annual production of 75 t and run at a profit of 12% of its gross turnover at full capacity of 150 t a year. The latter figure is mainly attributable to the sale of 450 kg of top-quality shell. The thick shell which can be obtained from farmed C. mydas is comparable in quality to that of E. imbricata, and might to some extent replace its market.

iii) Assurance that the operation shall be carried out at all stages in a humane (non-cruel) manner.

The proposal does contain such an assurance. One of the chief objections on this point to the proposal presented to the 1985 CITES conference concerned the dermal necroses. This subject has been discussed above, and the problem appears to have been substantially reduced by research into the formulation of new diets. The research is continuing and further progress is to be expected. As regards other aspects of the husbandry at the farm and the conditions of slaughter, the turtle ranching operation appears to conform to the standards generally accepted for modern intensive agriculture. It would be hypocritical to oppose the proposal on these grounds.

iv) Assurance that the operation will be beneficial to the wild population through reintroduction or in other ways.

[An earlier paragraph in Conf. 3.15 stipulates that "the operation must be primarily beneficial to the conservation of the local population (i.e., where applicable, contribute to its increase in the wild)". These two requirements will be considered together.]

The proposal lists seven ways in which the ranching operation benefits the local [turtle] population. These will be discussed in turn:

1. Return of doomed females to the sea.

Although this is a natural form of mortality, it can be very substantial. Hughes (1970) recorded that at least 50 turtles perished on the rocky lower margin of Europa beaches during his survey between 5 November and 20 December, although he implied that most of these had finished nesting. The saving of females which have become disorientated can undoubtedly be beneficial, and was recognised as the most important of such measures by several of the commentators in the Annex to the 1985 ranching proposal. Unfortunately, the exact value of this measure is difficult to quantify, as systematic records have not been kept. Table 6 of the proposal contains records of the numbers of females saved, but the figures for 1984 and 1985 are very low and are said to be incomplete. It should be pointed out that the return of mature females to the sea is a strenuous activity which appeared to be willingly carried out by the Meteorological staff at Tromelin.

2. The release of hatchlings at night.

Prior to the submission of the 1985 proposal, there was a systematic policy of collecting hatchlings which emerged during the day, and thus protecting them from frigate predation. Half of the hatchlings would be retained for the ranch and half would be released during the hours of darkness. This policy almost certainly results in increased hatchling survival, but its value is chiefly cosmetic, the number of hatchlings thus saved being tiny in comparison to the amount of work involved. In the wake of the disappointment following the rejection of the 1985 ranching proposal, this practice appears to have been allowed to drop in 1985 (Table 6 of the proposal). Higher numbers were again saved in 1986, but the number of hatchlings released on Tromelin was only 33% of the number removed for the farm, although proportionately

more hatchlings were released on Europa. If the policy of releasing half of the hatchlings were strictly adhered to, it would ensure that no more than 50% of the hatchlings emerging by day were taken for the ranch.

3. Elimination of rats.

The elimination of rats on Tromelin was largely effected by the passage of severe cyclone which completely inundated the island in 1986. Since then, very few rats have been seen, and the eradication programme has been suspended. If the eradication programme could be intensified at this stage, it is possible that it could be successful. When the island was visited by a panel of experts in 1984, several of them commented on the quantity of rubbish that had been allowed to accumulate around the station. A visit in January 1987 showed that substantial progress had been achieved in tidying up the island, the only rubbish visible being confined to a dump at the end farthest from the station. Household rubbish was apparently burnt or routinely removed from the island by the supply aircraft, but no attempt seemed to have been made to remove the backlog of larger items accumulated in the dump.

4. Installation of a deflector for the lighthouse on Tromelin.

The proposal states that a deflector has been fitted, but this is misleading. A deflector has indeed been fitted, but when inspected in January 1987 it was so low that it was completely ineffective, the shadow that it cast extending barely 17 m from the foot of the buildings. The main nesting beach was still fully exposed to the beam from the lighthouse.

5. Education programme for tourists.

6. Distribution of a poster and educative video.

One of the most striking features of a visit to Réunion, and in particular the turtle ranch, is the almost complete lack of educative material explaining the globally endangered status of sea turtles or the need to avoid buying wild-caught turtle products. The ranch has a shop and reception centre where tourists are admitted, and although a diligent search revealed a pamphlet about turtle conservation kept behind the reception desk, there were no posters explaining about the status of wild turtles, nor any indication that all of the turtle products on sale had come from ranch-reared rather than wild turtles. The only visible attempt at education was the showing of a video in one of the out-buildings which tourists visited on a tour of the external facilities of the ranch. There is indeed great scope for public education on turtle conservation in Réunion, and the manager of the ranch expressed an interest in funding the production of educative posters and other material which could be displayed at the ranch, at the airport and at commercial outlets, such as restaurants and gift shops, where turtle products are sold. If such an education programme could be stimulated and possibly funded by the ranch it would certainly be beneficial. It is merely surprising that so little attempt had previously been made, in spite of the two proposals that had previously been submitted to CITES.

7. Development of research programmes on turtles in the Indian Ocean.

A considerable amount of research has recently been undertaken on sea turtles in the region, and several important papers published which have substantially added to our knowledge of turtle biology. It would be possible to argue that such research would have been undertaken irrespective of the ranch, but realistically it is clear that the existence of the ranch, and particularly the interest generated by the CITES proposals, has stimulated the supply of research funds for this subject. This is probably the most beneficial effect of the ranching operation to turtle conservation. If the ranching proposal were to be rejected again, it is highly likely that funds allocated for turtle research would be curtailed, simply because of the lack of commercial incentive. There are already signs of a restriction in research funds. All of the research is carried out by IFREMER, a Government institute which works on four-year budgeting periods. Most of the intensive surveying of turtle populations on Europa and Tromelin was carried out from 1981 to 1984, but the current research allocation does not permit the stationing of research personnel on the islands, and consequently subsequent censuses of nesting tracks has been carried out by meteorological personnel. Frazier (1984) suggested that the ranch should be made to pay a licence fee for each hatchling removed from the islands, which could then be specifically allocated for turtle research, thereby ensuring continuity of funding, but this suggestion does not appear to have been taken up.

To these benefits outlined above should be added the effect of substituting farmed turtle products for wild products in national or international markets. This argument has previously been discussed, and will not be considered further.

There is a negative side to the potential benefits of the ranch: the question of what would be the result of rejecting the proposal. The probable interruption of research funding has already been mentioned, but there are other likely effects of the inevitable disapointment. After the 2nd propsal was rejected in 1985, there are signs that some conservation work on the Iles Eparses was discontinued, in particular the release of hatchlings during darkness. All steps to mark ranched turtle products were dropped, and there are some indications that the same might happen again (see below). It is not conceivable that the Protected status of the Iles Eparses would be relaxed while French administration continues, indeed to threaten such a step would be thinly veiled blackmail; however, other conclusions might be reached if France were ever to cede sovereignty of the islands.

In conclusion, it can be seen that the ranching operation on Réunion has very few demonstrated direct or indirect benefits to the wild turtle population, although the rescue of disorientated females is potentially of some significance. To those not familiar with turtle conservation problems, it might seem odd that there is no release programme, other than the short-term protection of hatchlings, for augmenting wild turtle populations as stipulated in Conf. 3.15. The reason for this is not so much a lack of will but a lack of concensus. The release of turtles is almost as controversial a subject as that of ranching itself. The value of headstarting of hatchlings is considered to be "questionable" as it "offers the very real possibility of lowering rather than raising the chances for success" (Ehrenfeld,

1982), and the long-distance transport of turtles to re-establish extinct or severely depleted turtle populations, detrimental to the genetic integrity of the local turtles. In the face of such uncertainty it is usually considered safer to refrain from the more manipulative techniques in turtle conservation. The real reason why the ranch does not benefit local turtle populations to any greater extent is because the conservation of turtles on Europa and Tromelin is already very good, and it is therefore difficult to find ways of improving it. If the lack of significant benefit is used as an excuse for rejecting the ranching proposal, then France will effectively be being penalised for protecting its turtles too well. The consequence of this would be that countries which intended to exploit their turtle populations by ranching in the future should not instigate total protection immediately as this would prevent them from implementing significant improvements later that would allow them to comply with the requirements of Conf. 3.15. It is clearly against the spirit of CITES to prevent the exploitation of a well-protected population on the grounds that it could not be benefitted further.

v) A description of the methods to be used to identify the products through marking and/or documentation.

[An earlier paragraph in Conf. 3.15 contains the requirement that "the products of the operation must be adequately identified and documented to ensure that they can be readily distinguished from products of Appendix I populations". These two requirements will be considered together.]

If these two requirements are interpreted to mean that products must be adequately identified after the ranching proposal has been accepted, then further discussion on this point is superfluous, as the CITES TEC Meeting has already discussed and approved the proposed measures for marking turtle products. However, it should be pointed out that marking procedures were discussed and outlined at the 5th meeting of the Conference of the Parties to CITES, but none has been implemented. When the ranch was visited in January 1987, there was an astonishing lack of practical steps taken to differentiate the ranched products from those of wild-caught turtles. At the farm shop itself, there was no notice to this effect, and the only indication was on tins of turtle meat and turtle soup, which had "produit de l'élevage" printed in letters so minute as to be barely legible even at close range. Three shops selling carved shell products were visited, but only one of these had notices indicating that the stock was from farm-reared animals. These notices were small, typewritten and inconspicuous. When questioned as to whether any of the customers ever asked about the source of the shell, the shop-owner replied that they were sometimes curious to know why her jewellery was so much more expensive than the Madagascan Hawksbill shell jewellery that was illegally on sale elsewhere on the island. Many restaurants had turtle meat on their menus, but none of these had any indication of the source of the meat. The only products that were seen to be clearly marked were the smoked meat products prepared at the local smokehouse. The proprietor indicated that this was because they were exported to Metropolitan France where customers wanted to be assured that the meat was of farmed origin. In January, 1987, plans to introduce a marking system, as outlined by the proposal document, were well advanced, but there was some confusion as to when the scheme was to begin. One informant said it was to start in February, while others indicated that it would not be put into operation until

after the CITES approval had been given, pointing out that the logo chosen for the marking contained the words that CITES approval had been given.

vi) Assurance that the criteria continue to be met, with records open to scrutiny by the Secretariat, and that the Management Authority shall include in its reports to the Secretariat sufficient detail concerning the status of its population and concerning the performance of any ranching operation to satisfy the Parties that these criteria continue to be met.

The proposal does contain an undertaking from the Management Authority to this effect.

Justification

The primary justification for applying for transfer to Appendix II appears to be to allow access to overseas markets for turtle products. It is argued that this will increase the trade volume, possibly give higher prices for certain products, and will thereby interest some major manufacturers in handling and processing the products of the ranch. The proposal states that local demand for turtle products greatly exceeded the ranch production of 30 t in 1985, and that it was estimated to be able to sell an annual total of 75 t locally and in Metropolitan France. At this level, the ranch would be profitable, even without the tourist income. Although it is not explicitly stated, it is assumed that a production of 150 t a year, with the ranch at full capacity, would require overseas sales.

Traditionally the main markets for meat products have been in Europe and North America. Since the implementation of EEC Regulation 2636/82 in 1984, the trade in products within the EEC has not been subject to CITES controls, as it is not regarded as international trade. Thus it is not necessary to transfer the population to Appendix II in order to sell products within the EEC. Some European countries, notably F.R. Germany and Denmark, have announced the intention of prohibiting imports of turtle products from Réunion, although this appears to be in contravention of EEC trade regulations. It has been argued that transfer of the turtle populations to Appendix II would persuade them to relax this stand, although the correct implementation of European trade measures should have the same effect. The American market is closed as a result of the Endangered Species Act (E.S.A.) which takes stricter measures than CITES and is independent of it. Even if the ranching proposal were accepted, it would still be necessary to relax the E.S.A. before exports to the USA could take place. In view of the history of the listing of C. mydas on the E.S.A. in relation to Cayman Turtle Farm, it is far from certain that any relaxation would take place.

Japan has always been the chief market for turtle shell, and its dealers have certainly shown an interest in the high quality C. mydas shell which is produced on Réunion as a substitute for the shell of E. imbricata which they currently use. However, if the ranching proposal were to be accepted, the implementation of Resolution Conf. 5.16 would prevent France from exporting shell to Japan unless it could be persuaded to withdraw its reservation on C. mydas. In the absence of any assurance from Japan to this effect, it would be unwise to rely on the availability of this market.

It therefore seems that the acceptance of the ranching proposal would confer few, if any, advantages in terms of access to known, legal overseas markets.

## CONCLUSIONS

On biological grounds, the conduct of the ranching operation for *Chelonia mydas* in Réunion appears to meet all the required criteria of Conf. 3.15. The collection of hatchlings from Europa and Tromelin appears to cause no significant harm to the wild populations and to be controlled conscientiously and effectively. The only way in which the operation may have a detrimental effect on wild turtle populations would be in impeding the control of or stimulating the trade in wild turtle products. Both of these possibilities could be prevented by the correct implementation of CITES controls, and it is therefore of considerable concern that there appear to be serious shortcomings in the protection and control of trade in wild turtles in France.

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