

USO DE DELFINES (*Inia geoffrensis*, *Sotalia fluviatilis*) COMO CARNADA EN LAS RDS MAMIRAUÁ & AMANÃ



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REGISTROS

1. REGISTROS EN AMAZONAS

Estupiñán et al. (2003)

Serrano et al. (2007)

Da Silva & Martin (2007)

2. CONTEXTO SOCIAL EN LA VÁRZEA

3. LA PESCA DE LA PIRACATINGA



LA PESQUERÍA

4. PIRACATINGA (*Calophysus macropterus*)



5. GENERALIDADES DE LA PESQUERÍA: a) carnada



LA PESQUERÍA

5. GENERALIDADES DE LA PESQUERÍA: a) pesca manual



LA PESQUERÍA

5. GENERALIDADES DE LA PESQUERÍA: b) pesca corral flotante



LA PESQUERÍA

5. GENERALIDADES DE LA PESQUERÍA: c) pesca de canoa



LA PESQUERÍA

6. COMERCIALIZACIÓN

- 1) Patrón;
- 1) Re-venta al comprador;
- 1) Venta directa TFF/TB.



LA PESQUERÍA

7. GENERALIDADES DE LA PESQUERÍA: c) rendimiento y \$\$\$\$\$



BAJA TEMPORADA:

1Kg=\$R 0.80~U\$S 0.50

1 boto=HASTA 600 Kg

\$R 480~U\$S 235

1 tucuxi=HASTA 200 kg

ALTA TEMPORADA (enchente)

1 Kg=\$R 2.00~U\$S 1.00

600 Kg=\$R 1200~U\$S 586

-300 Kg~\$R 240~ U\$117 (BT)
~\$R 600~U\$S 293 (AT)

De qué depende la captura?

SITUACIÓN EN LAS RDS

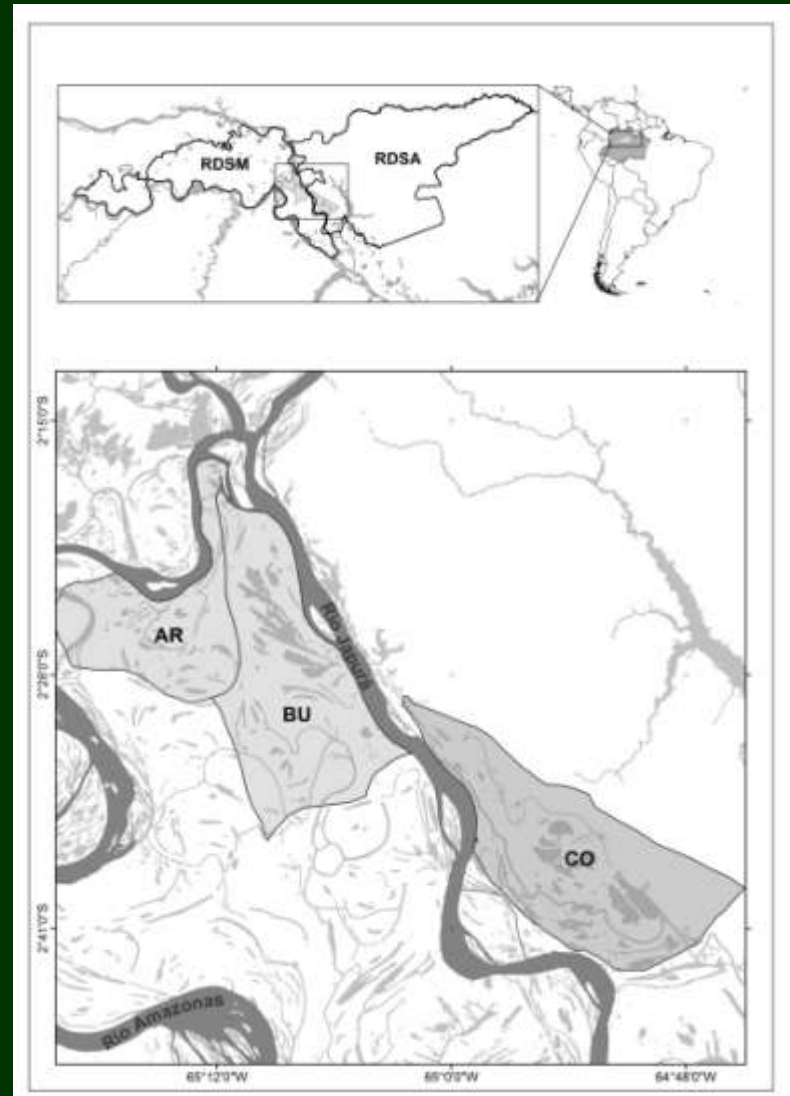
➤ 31.5 % CETÁCEO, 68.4% REPTIL

JAPURÁ: pesca complementaria a otros recursos (bagres, pirarucu, tambaqui)

- Pescadores jóvenes, obtienen la carnada ellos mismos.
- Dinámica compradores

AMAZONAS: comercio de delfines enmallados; acopie e venta de botos y jacarés????.

-1 boto: \$R 200-250 (U\$S 98-U\$S 122); 1 tucuxi \$R 100-150



PROBLEMAS OBTENCIÓN DATOS

1. DESCONFIANZA COMUNIDADES

2. TERRA INDÍGENA

3. DEPENDENCIA COMPRADORES

4. DIFICULTAD OBTENCIÓN
MUESTRAS BIOLÓGICAS



BOTOS VS PIRACATINGA

- AUSENCIA DATOS ESTIMACIONES DE ABUNDANCIA
- AUSENCIA DATOS TASA DE MORTALIDAD NATURAL E INCIDENTAL
- QUÉ PASA EN OTRAS ÁREAS?
- IMPACTOS POBLACIONALES Y ECOLÓGICOS DESCONOCIDOS (I_g , M_n , C_m)



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Ameaças aos golfinhos amazônicos (*Inia geoffrensis*, *Sotalia fluviatilis*) no baixo rio Japurá



Foto: V. Iriarte

Interações dos cetáceos com as atividades pesqueiras:

- ✓ Captura incidental (Rojas-bracho et al., 2006; Mansur et al., 2008; Crespo et al., 2010)
- ✓ Captura intencional (Goodall & Schiavini, 1994; Van Waerebeek et al., 1997; Secchi, 2010)
- ✓ Competição pelos recursos (Crespo & Hall, 2002; Read, 2008; Loch et al., 2009; Iriarte & Marmontel, 2011)



Registros:

- Captura incidental (Martin et al., 2004; da Silva & Martin, 2010; Iriarte & Marmontel, 2013)



Registros:

- Captura intencional (Leatherwood & Reeves, 1997; Gómez et al., 2008; Brum, 2011; da Silva et al., 2011; Mintzer et al., 2013; Iriarte & Marmontel, submetido)



Métodos:

- Saídas mensais (Set 2010-Set 2012); bases de campo Preguiça, Jarauá e Cauaçu
- ✓ Monitoramento: baías, praias, áreas com concentração de capim
- ✓ Conversas informais



Métodos:

- Monitoramento de 117 **eventos de pesca** da piracatinga (*Calophysus macropterus*)
- ✓ **Observação direta** da isca antes do evento de pesca
- ✓ Monitoramento **incógnito post-pesca**



Evidência empírica:



Evidência empírica:



Evidência empírica:



Resultados: eventos de mortalidade



Iriarte & Marmontel (2013)

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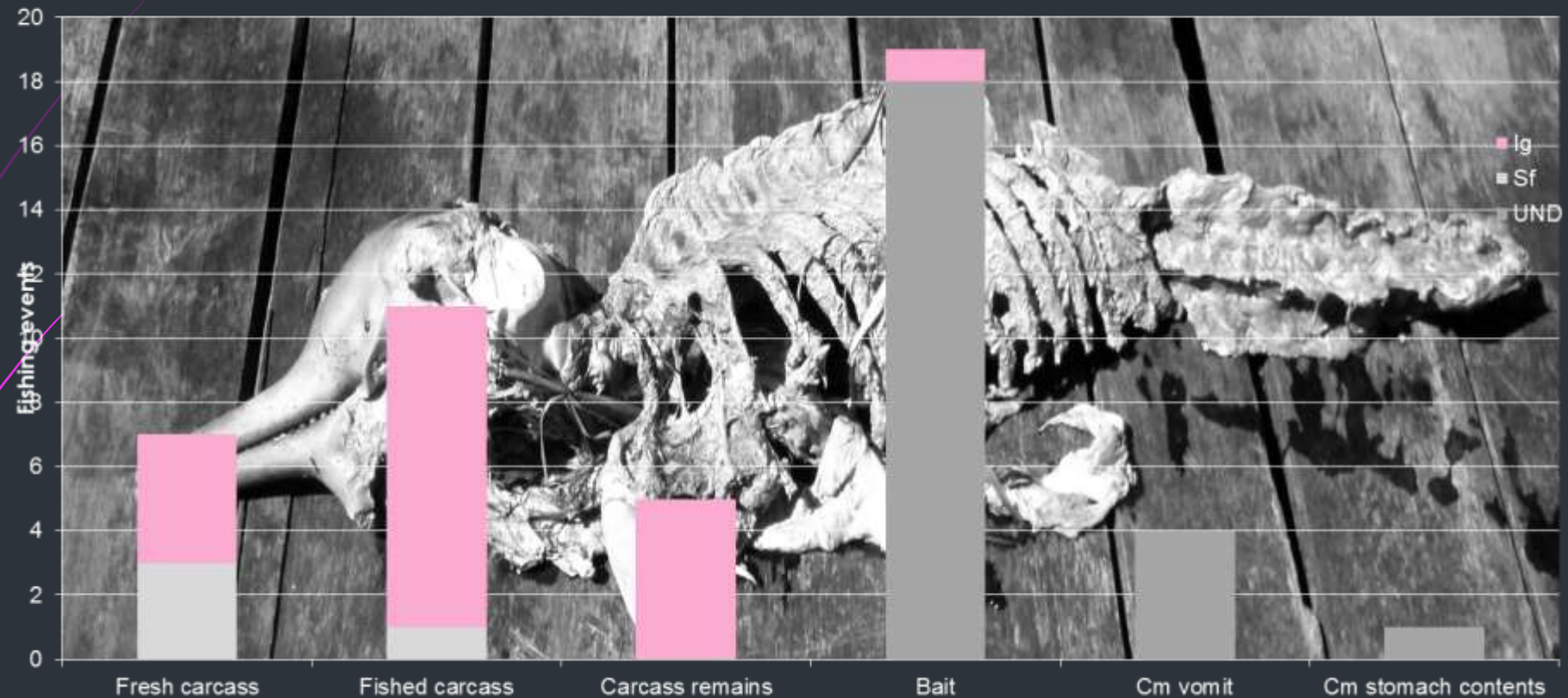
Table 1. Mortality events recorded (Ig = *Inia geoffrensis*, Sf = *Sotalia fluviatilis*; A = adult, J = juvenile, C = calf, F = female, M = male, UN = unknown; LW = low water, RW = rising water, HW = high water, FW = falling water; + = biological sample taken, - = biological sample not taken, N = necropsied)

Date information was recorded	Field ID	Hydrologic season	Species	Sex	Age class	Carcass stage	Biological sampling	Comments
12 Jan 2011*	C1	RW	Sf	UN	UN	C1	-	Entangled and killed for bull.
12 Jan 2011*	C2	RW	Sf	UN	C	C1	-	Disentangled and released alive.
12 Jan 2011*	C3	RW	Ig	F	UN	C1	-	Disentangled and released alive.
23 Jan 2011*	C4	RW	Ig	UN	UN	C2	-	Entangled and sold for bull (\$25.00 USD).
23 Jan 2011*	C5	RW	Ig	UN	UN	C2	-	Entangled; left on a beach and consumed by a jaguar.
9 Feb 2011*	C6	RW	Ig	F	UN	C1	-	Exhausted individual with rope tied around flukes by fishermen; killed for bull.
28 March 2011	218	RW	Sf	F	A	C2	+	Lactating; gillnet marks on the head, flanks, and flukes. Possibly killed by fishermen. Carcass was prepared for use as bull by fishermen. Carcass recovered on 31 March 2011 (Figure 3).
5 Aug 2011	327	FW	Sf	F	A	C3	N	Subtle gillnet marks on right flank; possibly hit by fishermen on right side of the head. Full stomach; in floating vegetation.
24 Aug 2011	343	FW	Ig	UN	J	C4	+	Gillnet marks around rostrum; used for bull (Figure 4). On a beach.
25 Aug 2011	351	FW	Ig	M	J	C4	N	Entangled on the caudal peduncle (cut-off flukes); full stomach. Floating downriver.
28 Aug 2011	001	FW	Sf	M	A	C2	N	Gillnet marks around rostrum; full stomach. SERP reported.
5 Sept 2011	386	FW	Ig	M	J	C2	+	Gillnet marks around rostrum, left pectoral fin, and flank. Carcass was prepared for use as bull by fishermen.
6 Sept 2011	391	FW	Sf	M	A	C2	N	Gillnet marks on the head, flanks, and caudal peduncle; full stomach. SERP reported.
11 Sept 2011	401	LW	Sf	M	C	C3	N	Gillnet marks on anterior body portion and left pectoral fin; possibly killed by fishermen. Empty stomach; floating downriver.
12 Sept 2011	404	LW	Sf	F	A	C2	N	Lactating; gillnet marks on head, back, and flanks (Figure 2). Full stomach; in floating vegetation.
15 Sept 2011	405	LW	Ig	M	J	C4	N	Without apparent gillnet marks; possibly killed by fishermen. Broken rostrum; cuts and stab wounds all over the body. On a beach.
1 Oct 2011	004	LW	Ig	F	A	C4	N	Possibly entangled; suspected blow in the head by fishermen. Floating downriver.
20 Oct 2011*	C7	LW	Sf	UN	UN	C2	-	Entangled; carcass discarded by fisherman.
1 Nov 2011*	005	LW	Ig	UN	J	C5	+	Entangled in fixed abandoned gillnet; totally decomposed.
17 April 2012	C8	RW	Ig	F	A	C2	-	Entangled and discarded; SERP reported.
17 May 2012	C9	HW	Sf	UN	UN	C4	-	Entangled in an abandoned gillnet; advanced decomposition state. SERP reported.
19 May 2012	025	HW	Sf	M	J	C2	N	Entangled in fixed gillnet; full stomach. SERP reported.
20 May 2012	026	HW	Sf	M	J	C2	N	Entangled in fixed gillnet; full stomach. SERP reported.
5 June 2012	027	HW	Sf	F	C	C2	N	Entangled in fixed gillnet; full stomach. SERP reported.
26 June 2012	C10	HW	Sf	UN	UN	C2	-	Entangled in fixed gillnet and discarded; SERP reported.

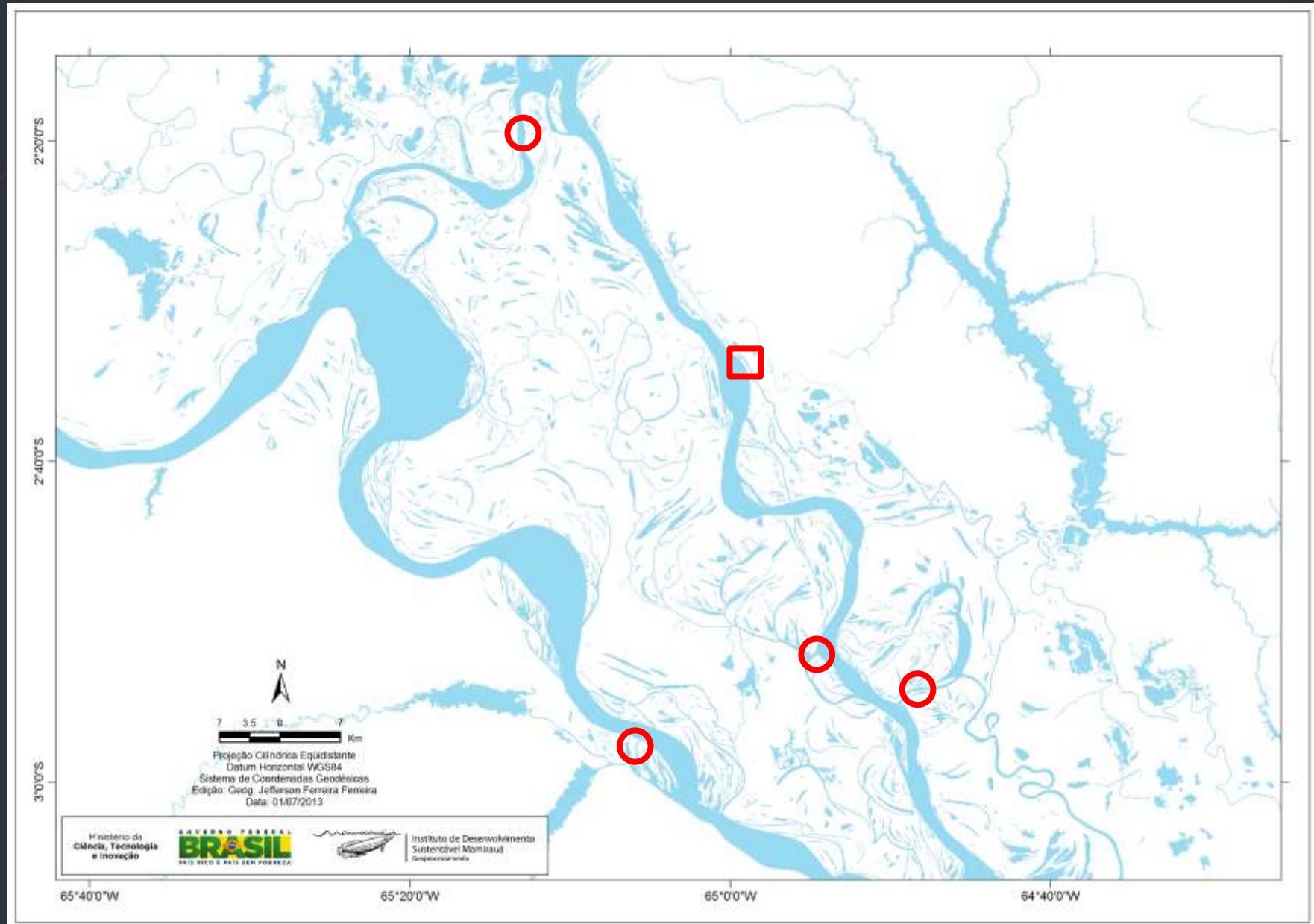
*Data from community surveys



Resultados: 41 eventos de pesca de piracatinga com isca de gofinho (35%)



Resultados: áreas de vulnerabilidade



Discussão: são as RDS efetivas para a conservação dos golfinhos?



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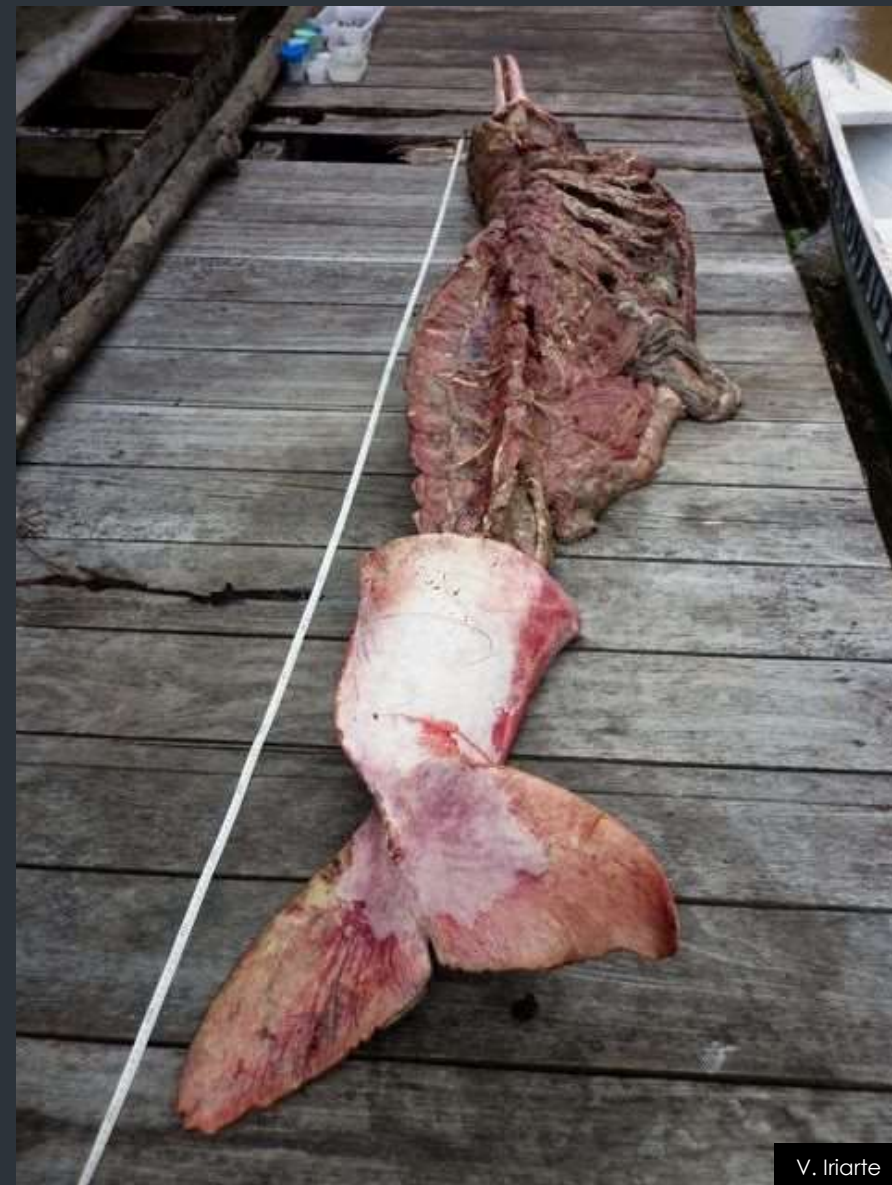


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Discussão: impactos das atividades pesqueiras nos golfinhos?

IUCN: DD/ MMA: QA

- Intensificação da atividade pesqueira (McGrath et al., 1993; Silvano et al., 2009)
- Interações ecológicas; pesca + disponibilidade de recursos: desconhecido
- Cetáceos odontocetos altamente suscetíveis as remoções (Wade et al., 2012)
- *Sotalia*: alto risco de emalramento (Crespo et al., 2010)
- *Inia*: alta filopatria de fêmeas; populações locais vulneráveis a extinção (Hollatz et al., 2011)



Discussão: são representativos os dados dessa pesquisa?

- ✓ Epperly et al., 1996: **7-13%**;
- ✓ Faerber & Baird, 2010: fatores físicos & encalhes;
- ✓ Williams et al., 2011: **2%** (50+);
- ✓ Prado et al., 2013: **10+** encalhes;
- **Amazônia: alta v corrente, alta T, presença consumidores.**



- O uso dos golfinhos como **isca** para a pesca da **piracatinga** representa uma **ameaça** em **crescimento constante** para os golfinhos Amazônicos, particularmente para o **boto**;
- A **captura incidental** de ambas espécies poderia implicar números **importantes**, especialmente para o **tucuxi**;
- É **necessário** implementar **medidas precautórias** em **curto prazo** e desenvolver pesquisa **interdisciplinar** para poder estabelecer **soluções efetivas** em **diferentes níveis**;
- **Intensificação na fiscalização** e programas de **educação** são necessários com **urgência**.





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