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Published in: Proceedings of the *Untangled* symposium: Exploring the impact of marine debris on animal welfare and weeking animal-focused solutions. 4-6 December 2012, Miami, FL, USA, page 53.

Cetacean bycatch in fishing gear is recognized as one of the largest marine conservation issues worldwide. Interactions with fisheries occur mainly with artisanal and industrial fishing gillnets and both small and large cetaceans are involved. Ecuador is a major breeding area for East Pacific humpback whales that migrate from their feeding grounds in Antarctica. Off the Ecuadorian mainland, humpback whales are found in the marine area of the Machalilla National Park from June to October. The whale watching tourism and fishing are the main economic activities of the Ecuadorian coastal towns.

Overfishing has reduced fish stocks that produce commercial fishermen increase the effort (number of nets) and fishing time (No. of days of netting) in search of higher returns. In Ecuador the main gear is the gill nets surface. This gear has become marine debris that is often lost or the charges for several days. The gill nets is plastic material and polyester fibers. They also contain plastic ropes and buoys that flow from the fishing net.

Since 2009 the PWF started a study to assess the level of interaction of cetaceans with fishing nets in Machalilla National Park. The project is based on direct data collection through field research trips in whale watching boats. Recording and analysis of cetacean strandings and awareness campaigns with fishermen and local community.

From 2009 to August 2012 were 200 research trips which fifteen humpback whales were seen towing gear or rope around their body and these are referred to as 'entangled animals'. In 60% (n=9) of cases were involved in fishing nets, were exhausted and swam slowly. The fishing net was in pectoral fins, head and tail. Another 40% (n = 6) were cases of humpback whales stranded dead with evidence of fishing gear in his mouth and body parts. The evidence and analysis indicate that possibly stranding of cetaceans tangled in loose pieces of trammel nets at sea.

We documented six cases (40%) successful rescue of humpback whales, 4 adults and 2 calves. Various actors were rescue from fishermen, coastal communities, scientists, NGOs, divers and government staff. In all cases we used knives, machetes, clippers and hooks. All animals had a high degree of tiredness. In most cases the animals were rescued with direct approach. A preliminary estimate of 0,075 averaged entangled whales/ trip. 89% of cases evidenced gillnets or trammel nets with mesh size of 5 inches, of which 10% were electronic (plastic mesh), 5% seines (different fiber types), 6% undefined.

The workshops with fishermen revealed the lack of government policies for the conservation of cetaceans and especially the lack of support to the fisheries sector to find more environmentally friendly work alternatives.

It requires better coordination between fisheries and environmental authorities, NGOs and fishing communities to address the problem in a comprehensive manner. The workshops showed that fishermen are willing to change their fishing gear, and try other methods that reduce the impact on cetacean populations and improve the quality of surface gillnets, avoiding network losses and damage causing marine pollution problems.

Evaluación Preliminar de la Interacción entre Cetáceos y Pesquerías en el Ecuador Continental

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En el Ecuador Continental existen aproximadamente 56.060 pescadores artesanales con 9.807 embarcaciones de pesca. El arte de pesca más utilizado es el trasmallo superficial con 5 pulgadas de diámetro.

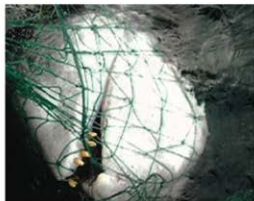


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Entre abril y septiembre del 2009 se realizó un estudio de interacción de cetáceos menores con pesquerías artesanales en tres caletas pesqueras en el Ecuador continental: Puerto López, Machallilla y Salango.

	ABRIL	MAYO	JUNIO	JULIO	AGOSTO	SEPTIEMBRE	TOTAL
Primer Día	30/04/2009	05/05/2009	01/06/2009	01/07/2009	05/08/2009	02/09/2009	30/04/2009
Último Día	30/04/2009	31/05/2009	30/06/2009	30/07/2009	28/08/2009	10/09/2009	10/09/2009
N° de días en el Agua	1	53	67	71	39	3	234
N° de viajes	1	41	64	35	33	3	195
N° de horas en el Agua	13.25	952.54	1080.38	1187.65	556.25	46	3788.65
N° de delfines capturados	0	1	2	2	2	0	7
N° de especies capturadas incidentalmente	0	178	281	182	55	2	678

"Esfuerzo de investigación de observadores en embarcaciones de pesca artesanal"



Durante 185 viajes de investigación se registró la captura incidental directa de 7 cetáceos menores de cuatro especies diferentes: dos bufeos *Tursiops truncatus* (28.57%), un cachalote enano *Kogia sima* (14.28%), dos delfines de *Risso Grampus griseus* (28.57%) y dos delfines manchados *Stenella attenuata* (28.57%).

Todos los casos ocurrieron en redes agalleras de superficie con un ojo de malla de 5 pulgadas. El índice de mortalidad promedio estimado fue de 0.07 delfines/día.

Desde 1998 hasta el 2012 se han registrado 73 casos de mamíferos marinos con interacción directa con redes de pesca. Estos registros están basados en varamientos y observación directa en botes de investigación.

El 62% (n=45) de casos eran ballena jorobada *Megaptera novaeangliae* y el 4% en *Grampus griseus* y *Physeter macrocephalus*.



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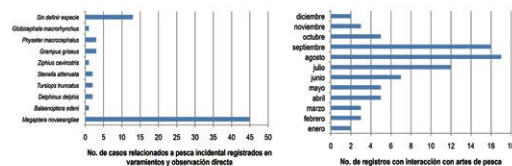


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Una estimación preliminar de enredamiento promedio fue 0,075 ballenas/viaje.

El 89% de casos evidenciaban redes agalleras de las cuales 10% eran electrónicas, 5% redes de cerco, 6% sin definir.

Hasta el 2012 se han documentado cinco eventos exitosos de salvamiento a cetáceos enredados en artes de pesca. Uno de los más importantes realizados por pescadores locales que arriesgaron su vida para salvar a un ballenato.

Conclusiones

El trasmallo de superficie es el mayor problema para los cetáceos en el área de estudio. Los pescadores han cambiado las rutas de viaje, adentrándose a grandes distancias y están afectando especies de cetáceos oceánicas. El índice de mortalidad es 0.07 delfines/día. La tasa de enredo es de 0.075 ballena/viaje. Entre junio y septiembre se incrementa la tasa de captura incidental de cetáceos. Existe evidencia y predisposición en los pescadores para buscar soluciones a la interacción pesquera y salvar cetáceos enredados.

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