

PEG

Pinniped Entanglement Group

March 2021 Newsletter

IN THIS ISSUE:

- Page 2: Greetings from the PEG coordinator
- Page 3: PEG fact sheet
- Page 4: PEG Google drive
- Page 5-21: PEG news (Peru, Namibia, Russia, UK, USA, Australia)
- Page 22: Equipment/Tools
- Page 23: Deterrence information (USA)
- Page 24-26: PEG subgroup updates
- Page 27-29: University of Alaska collaboration
- Page 30-32: Outreach
- Page 33: Funding opportunity
- Page 34: Announcements
 - Page 35-38: Current PEG member list (as of 3/2021)





JUST A REMINDER







National Marine Fisheries Service



GREETINGS FROM THE PEG COORDINATOR

Greetings PEG Members and welcome to our latest PEG newsletter! I would like to extend a very warm welcome to our newest PEG members. I thought it would be fun to graph how PEG has grown over the years, so please check out the figure below. We started with 4 members in 2009 and are currently at 134 incredible, amazing, dedicated, PEG members! **THANK YOU PEG!**



Thank you all for your incredible work across the globe as you continue to help pinnipeds, even during this long pandemic. You continue to inspire me and this newsletter is full of your great work! For updates from PEG members in Peru, Russia, Namibia, the UK, Australia, and the USA, please see **pages 5-22**. To learn more about alternative solutions to plastics, please see an excerpt summary report by Heidi Pearson's University of Alaska Southeast students on **pages 27-29**.







Our PEG subgroups have gotten off to a great start and everyone has been working hard. We nearly have a completed draft 3-year PEG strategic plan and 1-year PEG action plan. We have had great meetings about remote darting, the impacts of plastic packing bands on pinnipeds, and ideas for a PEG documentary. To read more about our subgroups, please see **pages 24-26**.

Thank you all so much for your continued efforts to help pinnipeds, the oceans, and this earth. I am filled with gratitude for each and every one of you. You all inspire me in so many different ways and I just want to thank you for all that you do. You are making a positive difference for so many, and you are saving the lives of many animals that would not be here without your efforts. THANK YOU VERY MUCH! Please take care and stay safe and I hope we can all get back together in person soon.



Pinniped Entanglement Group

A global community dedicated to bringing a permanent end to pinniped entanglements

THE PROBLEM

Pinnipeds (sea lions and seals) are entangled in marine debris and ingest fishing gear.

WHO ARE WE?

The Pinniped Entanglement Group is a global community of **134** members in **17** countries dedicated to the safety and welfare of pinnipeds. PEG activities include entanglement prevention, outreach and education, innovative disentanglement techniques, and rescue.

OUR MISSION

To reduce pinniped entanglements in marine debris and fishing gear through education, outreach, and rescue.

OBJECTIVES:

- 1. Increase awareness about the plight of entangled pinnipeds.
- 2. Educate the public about the effects of marine trash on pinnipeds.
- 3. Find solutions to reduce trash in the ocean.
- 4. Improve and expand upon entanglement response techniques.
- 5. Safely rescue, disentangle, and release pinnipeds entangled in marine debris and fishing gear.

WHAT CAN YOU DO TO HELP?

- Lose the Loop! Prevent nooses. Cut any loops before discarding in the trash.
- Stash the Trash! Help keep plastic and other trash out of the ocean.
- Help fund outreach and entanglement response efforts.





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Interested in joining PEG?

Contact Kim-Raum Suryan at: Kim.Raum-Suryan@noaa.gov





PEG NEWS

Remember – we have a PEG Shared Google Drive

Please remember that we have a PEG shared Google Drive so everyone can access our past newsletters, outreach materials, call agendas and summaries, subgroup meeting summaries, entanglement and deterrence literature, and more. If you cannot access the drive, please contact Kim directly at <u>kim.raum-</u> <u>suryan@noaa.gov</u>. If you would like to add information to this shared drive, please send it to me and I will add it. Thank you!





PEG Website – Still In Progress

By Kim Raum-Suryan

The PEG URL will be **pinnipedentanglementgroup.org**. I will let you know when the site goes live. Thank you for your patience!









PEG NEWS



Entanglement and the Marine Debris Monitoring Program in Peru

By Carlos Yaipén-Llanos, DVM, ORCA PERU https://www.orca.org.pe/

The Case of Ralph (SASL-027), the First One.

"Ralph" is a juvenile male South American sea lion (*Otaria byronia*) rescued in the Lima City bay area, Peru. He was the first case of entanglement rescued by our Marine Mammal Rescue and Rehabilitation Program admitted for rehabilitation back on September 24th, 2011. "Ralph" arrived with a severe laceration on the underside of the right front flipper, a 17cm (6.7 inches) long wound that massively peeled the integument of the flipper.



"Active nylon fishing gear was spotted along the beach where the sea lion was found. The good physical condition and freshness of the wound, plus the stripped cuts on the flipper skin revealed that "Ralph" engaged with the fishing lines, probably while eating. In pain and incapable of swimming or walking, he stranded. The loose skin from the flipper was removed, and antibiotic treatment was given on the flipper and parenteral to prevent a secondary kidney infection.









PEG NEWS



Entanglement Peru - continued

Over the weeks, we regenerated the tissue of the flipper from the inner layers out, until the flipper skin reappeared replacing the scar.





"After over two months in rehab, he was released on November 27th, 2011 at Palomino Island where a sea lion rookery is located in front of Lima city. Celebrating this successful case, Ralph's release was covered by the news agency Reuters International and published in the news worldwide!













Pinniped Entanglement Updates - Peru

By Carlos Yaipén-Llanos, DVM, ORCA PERU, https://www.orca.org.pe/

Entanglements along the Peruvian coast have been circumstantial, with a very low incidence (2%) in contrast to the overall 20 year-long stranding record (N=2550). Having led the Stranding Network in Peru over two decades, ORCA has witnessed the overwhelming and ever-growing presence of fishing lines, boat ropes, plastic bags, and today, gloves and masks as part of marine debris taking a toll on marine life with different long-term lesions and infections. However, in the past two years, the short-term effect of active fishing gear is affecting local pinnipeds, and it is recorded nationwide. ORCA PERU has recorded the strandings of six species of Pinnipeds engaged with fishing gear and/or fishing activities; three resident species: the South American sea-lion (Otaria byronia), the South American fur seal (Arctocephalus australis), the Galapagos fur seal (Arctocephalus galapagoensis), and three transient species: the southern elephant seal (Mirounga leonina), the Juan Fernandez fur seal (Arctocephalus philippii) and most recently, the Antarctic fur seal (Arctocephalus gazella), all of them with very distinct feeding behavior, diet, and distribution. Anthropogenic disruption and climate change have been a constant for these species. Trying to adapt to live with adverse relations to the human population in Peru is a trend that could be developing worldwide in our current changing world.











PEG NEWS



Effective Entanglement Response - Peru

By Carlos Yaipén-Llanos, DVM, ORCA PERU, https://www.orca.org.pe/

Surprisingly so, most pinniped entanglements recorded in Peru have been that of sea lions affected by fishing gear with lesions on the underside of the flippers. The pinniped interacts with the active fishing gear to forage, causing a superficial laceration after being released of the entanglement by itself. The rising incidence of these interactions has led to identify postentanglement victims in nearby beaches, rocks or bays.



Fortunately, and effectively, 90% of these cases recovered completely after immediate rescue, and before secondary affections such as kidney failure, severe gastritis or emaciation set in. Neck injuries are rare but are becoming more frequent as fishing gear density increases in certain locations, primarily near pinniped rookeries. To date, cases with neck injuries are medically assisted at the beach under physical restraint, especially if the affected pinniped is a subadult or adult. With the increasing incidence of neck entanglements, ORCA PERU is looking forward to acquiring long distance gear to use chemical immobilization to disentangle pinnipeds in the future.





National Marine Fisheries Service





PEG NEWS



Ocean Conservation Namibia Updates

By Naude Dreyer, Ocean Conservation Namibia

My wife Katja and I founded Ocean Conservations Namibia (OCN) last year and had no idea what we were getting ourselves into. We just wanted to raise awareness about ocean pollution and take some direct action through our disentanglement work. We were shocked at the amount of work we saw once we could apply ourselves to this on a full-time basis. We have now increased our team to three full-time patrollers and aim to cover more fur seal colonies on our coast this year.

2020 was a good year for Ocean Conservation Namibia. In total, 615 seals were successfully caught and disentangled over two locations on the Namibian coast. The most common entanglement, making up about 60% of the cases was 1mm monofilament line commonly used in handlines by commercial fishermen targeting a local species called Snoek - a medium sized pelagic fish similar to a barracuda. The rest of the cases were predominantly plastic packaging straps and thin recreational fishing lines. Also in the mix were quite different types of net including large mesh gill net, trawler and purse seine netting. There were a few odd entanglements like the inner lining of baseball caps, PPE clothing, strings, ropes, and even a length of a ship's fire hose!

Toward the end of the year we experienced a mass die-off of Cape fur seal pups, with around 10,000 pups being born prematurely and dying at the Cape Cross colony alone. Under the guidance of leading scientists in the field, we collected many frozen and formalin samples and these were sent to Onderstepoort Veterinary School in South Africa. Reports could find no trace of toxins or disease/illness and it was concluded that the mothers were severely malnourished and aborted the foetuses as a result. The malnutrition seems to have been caused by abnormal weather patterns last year affecting the movements of pelagic fish in the area. The females were not able to access the large shoals of horse mackerel that they rely on to come in our spring time. We are currently in a strong La Niña cycle and history shows that this type of event has happened a few times in the last 30 years when we were dealing with the same weather.

Story about pup die-off:

https://www.bloomberg.com/news/articles/2020-10-14/mass-seal-pup-die-off-probed-by-namibia-s-government







Ocean Conservation Namibia Update - continued

PEG NEWS



Right now we are off to a slow start for the year, but this is very normal. Entangled animals are few are far between right after breeding time. We have caught and disentangled 20 seals for the year so far. What is alarming though is the rate of new pups being caught up in marine debris. We have caught 10 pups in the last few weeks that were entangled. These youngsters are only around 10 weeks old and have only been swimming for the last 5 weeks or so. They do not venture very far from shore yet, and this leads us to believe there is a large amount of rubbish drifting just behind the surf line on our coast. We are planning on doing a diving trip to survey the area as soon as sea conditions allow.



U.S. Department of Commerce | National Oceanic and Atmospheric Administration | National Marine Fisheries Service







PEG NEWS



Steller sea lion entanglement response in Russia

By Yulia Malygina, Ocean Friends, Boomerang Club, https://mmrescue.ru/en/

On January 6, a person called our hotline to report an entangled Steller sea lion. The animal was staying close to the shoreline. It had a fishing rope around its neck with a loose end reaching the ground. There were stray dogs nearby and the crowds began to build.

By the time volunteers arrived, it had left the spot and was out in the water. Volunteers observed its behavior and the hope that it might come ashore was fading. However, suddenly it began to come out of the water. It turned out to be a juvenile animal and it looked weakened.



We observed the Steller for a long time but could not take action because it remained in the water. Just as we decided to leave, it came out and was calm. We decided to try to disentangle it by using an extendable pole with a detachable hook. It's a special tool used for disentangling larger whales. It is normally used for attaching a control line or satellite buoy. We first tried this pole this past summer for fur seal disentanglement on Tyuleniy Island. Since tranquilizing medications are not

available, we had to work from a distance. Back then, we managed to cut several ropes with that tool. This time we used it to get hold of the animal and prevent it from returning to the water.

Pavel Tkachenko, an experienced emergency response worker, approached the animal from the left side. When the distance between him and animal was about 100 meters (~300 feet), he started to crawl and crouch. Once we put a hook over the rope on the Steller's neck, we managed to drag the animal closer and pull the rope off over its head. It was possible only because the animal was a juvenile. "This same technique would not work on a mature animal" said Vyacheslav Kozlov, the head of marine animal rescue team "Ocean Friends". The disentanglement was not complicated. Fortunately, the rope was loose and did not penetrate the skin. It took 20 minutes to take the rope off of the animal's neck.

The next day the same Steller was caught in an ice trap in the Mordvinov Bay.







PEG NEWS



Steller sea lion entanglement response in Russia - continued



In the morning, it was reported via "Ocean Friends" hotline that the sea entirely froze and the animal was sitting 200 meters from the shore by the small stretch of open water. There was nothing but ice around. Volunteers who arrived to the spot were struck by the changes that had happened to the area overnight. The previous evening right after rescue operation the Steller got under the water. It was expected that the animal would swim away. However, during the

night, the wind moved freezing pieces of drifting ice to the shore, building up fast ice. There was no open water anywhere nearby. Local people said it was 34° below zero and a strong wind that night. Leaving the animal there would cause it to freeze to death. After consulting with the scientists, it was decided to move the Steller to the open water. Two rescuers approached the animal. The water hole was frozen completely and the Steller could not escape. The animal was clearly cold and almost did not fight against being carried in the hoop.

It was put inside the car where it could warm up. After veterinarian check-up and another consultation from the scientists, it was decided to transport it to the safest place – Nevelsk City, an unfrozen bay where other Steller sea lions had arrived.

The Steller, named Snezhinka (Snowflake), was asleep all the way to back to Nevelsk. Though the sea was rough – the water in the enclosed bay was relatively calm. Other sea lions were also swimming in the water.









PEG NEWS



Steller sea lion entanglement response in Russia - continued



Before the release, the Steller had been marked with yellow paint on the neck and the back between shoulder blades so it would be easily recognized.



The most emotional moment was releasing the animal back into the wild. Once the Steller saw the sea, it easily swam into it.

https://www.instagram.com/oceanfriendsteam/ https://web.facebook.com/Oceanfriendsteam10













PEG NEWS



Cornwall Seal Group Research Trust Updates – Cornwall, United Kingdom

By Sue Sayer, Cornwall Seal Group Research Trust (CSGRT)

Our Photo ID Hubs processed 139,704 photos in 2020 and generated a total of 12,162 seal identifications of which 86% were re-identifications. This included our new maximum of 122 different individual seal identifications in a single survey that were CSGRT Photo ID meeting confirmed by two experienced volunteers. Of all the seals re-identified, 7 were seals we first added to our catalogues back in 2000 (4 males and 3 females).

777 observations of entangled seals were recorded up to a maximum of 19 entangled (current or ex) on a single survey. It is not always possible to add an entangled seal to the ID catalogue, so of the 777 records, 94 different entangled seals were identified on 492 occasions. The most frequently identified were 'Slipper' (42 times); 'Legs' (33); 'Beast' (24); 'Long line' (24) and 'Mono double' (20).

CSGRT highlighted the issue of lost fishing gear on a high-profile prime time BBC2 Series reaching 3 million viewers in the UK and now to be sold worldwide....our story of Lucky Bunting (rescued from trawl net in 2016 and still thriving today)

https://www.cornwallsealgroup.co.uk/2020/11/ simon-reeve-cornwall/. In fact, her story has progressed so much since filming this we have decided to make a film about Lucky Bunting ourselves as her story illustrates so well the work that we do.













PEG NEWS



Clean Catch UK

By Sue Sayer, Cornwall Seal Group Research Trust (CSGRT)

Clean Catch UK <u>https://www.cleancatchuk.com/</u> is a collaborative research programme dedicated to better monitoring, reducing, and, where possible, eliminating the accidental capture of wildlife in UK fisheries. This research will be initially focused in the Southwest. The programme draws on knowledge from both scientist and fishermen, to record incidences of wildlife bycatch and to develop practical solutions to reduce this bycatch.

This includes our case study of an entangled seal known prior to entanglement through to death. It is interesting to see progression of the entangled seal's neck wound during decomposition – that extended elongated neck of stretched tissues we have seen before. Histopathology conducted for James Barnett on a similar neck wound revealed it had occurred post mortem. Even if net is no longer present, the clean cut wound and extended neck may be a good indicator of entanglement. It is shocking just how much damage such an apparently small bit of lost net can do.







PEG NEWS

Alaska Region Pinniped Entanglement Reports

By Kate Savage, NMFS

It's hard to think of 2020 as anything other than the "Year of COVID". Some of the changes associated with COVID have been obvious, others less so. In 2020, we received 17 confirmed reports of entangled pinnipeds, down from 30 in 2019 (Fig. 1). For an entanglement to be documented, 3 steps are necessary: the event occurs, the event is observed, and the observation is reported. Although a variety of factors can change the number of reports we receive from year to year, it's likely that COVID precautions impacted reporting to some extent. For example, in 2020 much of the research and agency/departmental fieldwork was curtailed due to COVID. In Southeast and other parts of Alaska, marine based tourism, including cruise ships, fishing charters and whale watching cruises, was also halted. Consequently, the onus of entanglement reporting was almost solely on other members of the marine community, which may have resulted in fewer reports.









PEG NEWS



Alaska Region Pinniped Entanglement Reports - continued

The types of entanglements reported in 2020 were not unusual, nor were the species most affected. (Table 1).

Table 1. Entanglement type by species

	Neck entanglement			
	Packing band	Netting	Unknown material	
Steller sea lion	2	3	2	
Northern fur seal			3	
Ringed seal				

	Fishery Interaction			
	Hook on mouth	Ingestion	Caught in netting	
Steller sea lion	1	3	1	
Northern fur seal				
Ringed seal			2	



Right: A juvenile Steller sea lion entangled in a longline circle hook and gangion in May near Juneau. Photo courtesy: C. Thomas. *Left*: The first entanglement report of 2020, a young Steller sea lion with a neck entanglement, probably a packing band, observed in Kodiak. Photo courtesy NMFS Office of Law Enforcement.







PEG NEWS

Alaska Region Pinniped Entanglement Reports - continued

Two types of pinniped entanglements were reported: neck entanglements and fishery interactions. Historically, ringed seals and harbor seals are most prone to becoming entangled in fishing nets. These entanglements are most likely to result in immediate mortality, presumably from drowning. Northern fur seals are almost exclusively prone to neck entanglements and Steller sea lions are prone to both neck entanglements and fishery interactions, with the latter mainly in the form of gear ingestion.





Above: A young ringed seal in poor body condition caught in a Unalakleet subsistence fishing net in June. Photo courtesy: Gay Sheffield. *Left*: a young ringed seal in poor body condition caught in a Unalakleet subsistence fishing net in June. Photo courtesy: Gay Sheffield.



Above: An adult Steller sea lion caught in a Sitka hatchery net in August.





PEG NEWS

Alaska Region Pinniped Entanglement Reports - continued

In 2020, the two ringed seals and the single Steller sea lion caught in netting were both reported dead. All of the other reports were of live animals. While we have never received a confirmed report of a mortality due to a neck entanglement, it's highly probable that some of the neck entanglements are ultimately lethal, either directly due to the tissue destruction/asphyxiation/starvation or indirectly with compromised foraging, mobility etc. We have received reports of mortalities due to gear ingestions in the past, and one was reported in 2020.





Left: A young fur seal successfully disentangled from a trawl net in July on St. George. Photo courtesy: D. Lekanof/St. George Tribal Council.



Above and left: A Steller sea lion with flasher (lure) and ingested line found near Ketchikan in September. Photo courtesy M. Doran.





Alaska Region Pinniped Entanglement Reports - continued

PEG NEWS

The timing of reports in 2020 was also consistent with historical records (Fig. 2) and reflects when some events, such as fishery interactions, are likely to occur or when observers are most likely to be out on the water during the summer months.

Aside from a marked decline in the number of reports, 2020 was not unusual with respect to pinniped entanglements. It will be interesting to see whether entanglement reports increase as COVID disappears (fingers crossed) in 2021.

















Updates from Seal Rocks, Australia

By Rebecca McIntosh, Phillip Island Nature Parks

We released a female juvenile Australian fur seal from a fragment of trawl net at Seal Rocks in late December 2020. It was an amazing catch from Maddi Chambers, who works for the Marine Response Unit at Melbourne Zoo, and who was helping me on that field trip. We saw an entangled sub-adult male Australian fur seal at Cape Bridgewater colony in January – it was deeply embedded and the skin had grown over the back half of the neck - he was in the water so unfortunately we couldn't catch him.

PEG is grateful!

In the latest newsletter request, there was an option to share what you are most grateful for. We received the following responses. Thank you!

At **ORCA PERU** we are most grateful for in 2021 that our Marine Mammal Rescue and Rehabilitation Program continues, as more people get involved in our Marine Godparents Program to provide support to rescued patients. We are also grateful that our staff and volunteers are overall healthy and in alert spread along the coast during the worldwide sanitary alert.

Barbara Mahoney – I am grateful for companionship and generosity, from a distance, from family, friends, and co-workers. I am also grateful for science and scientists.



Kim Raum-Suryan – I am grateful for all of the amazing scientists that worked so hard to come up with a COVID-19 vaccine, for the frontline workers, healthcare workers, and everyone that went out into the world each day to do their job, putting their own lives at risk to help others. I am also so grateful for our wonderful and dedicated PEG members, for all that they do to help animals, people, and the ocean.

Wear grautude like a cloak and it will feed every corner of your life. —Rumi





EQUIPMENT/TOOLS

Portable Anesthesia Machine

By Dr. Shawn Johnson, Sea Change Health, Dr. Emily Whitmer, Jason Barcelon, and Michah Buster, The Marine Mammal Center

Treatment of entangled pinnipeds often requires anesthesia following capture in order to thoroughly examine and remove the entanglement. Inhalant anesthesia is a very quick and safe technique in pinnipeds to immobilize and anesthetize animals in order to reduce stress of the procedure, improve animal and human safety, and alleviate any pain related to the removal of the entanglement. For a California sea lion disentanglement project initiated on San Miguel Island, Channel Islands, California, we built an "ultra-light" portable anesthesia machine with an Eberlestock external frame backpack utilizing a Tec 5 isoflurane vaporizer, Western Medica EMS oxygen regulator, and Miden Medical CO2 absorber. The custom system weighs approximately 15 to 20 kg (depending on the amount of medical equipment carried) allowing the user to carry the anesthesia machine for long distances over uneven terrain with very minimal set up time between uses. Oxygen E tanks are carried separately. Please contact us if you are interested in more details.







PEG DETERRENCE NEWS



Effective Deterrents Workshop

By Kim Raum-Suryan

We are very happy to report that we (Protected Resources Division, NOAA Fisheries) received funding to host a virtual National "Effective" Deterrents Workshop in the USA. The proposed project goals are to work collaboratively with fishermen to find effective marine mammal deterrents to reduce fisheries interactions, reduce marine mammal injury and death, and economic and time loss to fishermen. We will form a working group that includes representatives of the fishing community, marine mammal researchers and managers, fisheries researchers and managers, and a social scientist to work cooperatively to identify current effective marine mammal deterrents by fishery type. NMFS will then host a virtual 2-3 day national workshop followed by virtual 1-2 day working group meetings in each region (Alaska, West Coast, Pacific Islands, Southeast, New England/Mid-Atlantic) to focus on specific fisheries conflicts by region. Finally, each region would be able to start testing currently available gear modifications or deterrents. Stay tuned for more information as we further develop workshop plans.









PEG SUBGROUPS

Packing Band Subgroup update

By Barb Lake, NMFS PRD

The PEG "Packing band" subgroup (Barb Lake, Kim Raum-Suryan, Casey Mclean, Laura Boren) is working on the issue of pinniped interactions with packing bands. Our group has met to discuss how to reduce and replace plastic packing bands with alternative non-lethal biodegradable bands. As we know all too well, plastic packing bands injure and kill marine life and contribute to the increase in plastic marine debris. In order to find solutions to this issue, the subgroup has created specific goals to research and solve the packing ban problem. The subgroup will work with the NOAA Central Library to create an annotated bibliography of impacts to marine species and alternatives available to packing bands and other plastics. This compilation of information will give us a basis to move forward with other goals such as investigating ways to reduce the use of packing bands and find biodegradable alternatives. We are also working in partnership with PEG member and professor Heidi Pearson and her marine mammal students at the University of Alaska Southeast. The students focused on researching possible solutions to plastic packing bands (see summary excerpt starting on page 27). Engagement with community members like this is crucial to all of the work we do in PEG and this is one example of how these connections can lead to positive change for pinnipeds. The subgroup is also investigating ideas to engage lawmakers and corporations to educate them about the problem of entanglements due to packing bands and find solutions to reduce the use of these bands. One such idea is to print "Lose the Loop" directly on packing bands and encourage companies to implement internal policy regarding the use of packing bands. We feel there are many ways we can approach the goal to reduce and replace plastic packing bands. Our subgroup will meet monthly and we encourage PEG members with ideas or resources to reach out to any member of the team listed above. - END



Lose the loop!

If you would like to use the video clips of "Sammy" the sea lion cutting a plastic packing band, milk carton loop, and mask loop, for your outreach, you can find the video on our shared google drive under outreach – Video Sammy sea lion Lose the loop.







PEG SUBGROUPS

Darting Protocol Subgroup update

By Kim Raum-Suryan

The PEG "Darting Protocol" subgroup is comprised of PEG members Lauri Jemison, Shawn Johnson, Michael Lynch, Stephanie Norman, Kim Raum-Suryan, Kate Savage, and Dave Zahniser. The purpose of this subgroup is to share pinniped darting protocol knowledge, techniques, tools, best practices, and lessons learned. Remote sedation of pinnipeds using a combination of medetomidine, butorphanol, and midazolam has been used successfully for pinniped entanglement response in recent years. However, there are many aspects of response that must be considered (e.g., human and animal safety, animal behavior and physiology, preparation, training, cost, etc.). To ensure pinniped entanglement responders are using best practices, it is important that the pinniped entanglement community do its best to coordinate and share the safest, and most current knowledge, techniques, tools, and best practices to ensure responses are the safest possible for both humans and animals.

The team decided to meet quarterly. We have had one meeting so far and the summary of our meeting can be found in our shared PEG Google Drive under SUBGROUPS_2020_2021_Info – Darting Protocol Subgroup. If you are interested in being a part of this subgroup, just let us know. Thank you!

Documentary Subgroup update

By Kim Raum-Suryan

The PEG "Documentary" subgroup (Laura Boren, Sue Goodglick, Stephanie Norman, Michelle Oakley, Kim Raum-Suryan) is working together to find the best way to highlight global entanglement impacts to pinnipeds and offer ideas about what can be done to help reduce marine debris. We have been trying to find a production company that might be interested in making a PEG documentary. So far, we have had conversations with Dr. Michelle Oakley (Yukon Vet Nat Geographic show and PEG member) in which we discussed the idea of filming an episode with her production company once the pandemic is over and we can all get out into the field again. We are hoping an episode on Michelle's show might help foster interest in a full PEG documentary. We also met with Nathalie Swain-Diaz (Wild Space Productions, Bristol, UK) to discuss a possible PEG documentary. They are looking for more cinematic marine life stories with a focus on the animals. We told Nathalie about a lot of your ongoing projects and told her if she was interested that we could put you in touch with her. Next year, Netflix will have a digital series, which will be more of a social media platform. This might work better for the more human aspect of PEG. We will keep trying. If anyone has ideas, please let our subgroup know or please join us during our next meeting. Thank you!







PEG SUBGROUPS

PEG Strategic Plan Subgroup Update

By Kim Raum-Suryan

The PEG "Strategic Plan" subgroup (Casey McLean, Greg Frankfurter, Barb Lake, Kim Raum-Suryan) is making great progress on both a three-year PEG Strategic Plan and a one-year Action Plan. The executive summary and three main objectives are below. We will be sending out the Strategic and Action Plan DRAFTS soon for your feedback.

Executive Summary

The Pinniped Entanglement Group (PEG) was established in 2009 to promote the prevention of pinniped entanglements in marine debris and interactions with fishing gear. This plan, created by a PEG Strategic Planning Subgroup sets forth the objectives and strategies necessary to continue to accomplish PEG's mission to reduce pinniped entanglements in marine debris and fishing gear through education, outreach, and rescue. The information below summarizes the objectives, strategies, and key outcomes for 2021 through 2023.We will be sending out the draft for comments soon. Please stay tuned.

The Strategic Plan is organized into three main objectives:

- 1. Increase communication, education, outreach, and awareness
- 2. Pinniped entanglement response best practices
- 3. Improve pinniped entanglement science and data collection

PEG Funding Update

By Kim Raum-Suryan

We have been in discussions with SR³ (Sealife response, rehab, research) <u>https://www.sealifer3.org/</u> about being a fiscal sponsor for PEG so PEG can accept donations. You may recall that The Marine Mammal Center had offered to do this for us in the past, but for many reasons, it did not work out. Casey McLean, Executive Director at SR³, offered to help us with this and we (Kim Raum-Suryan, Kate Savage, Lauri Jemison) have been working together with Casey to make this happen. We hope to have everything worked out very soon. Please stay tuned.





National Marine Fisheries Service



UNIVERSITY OF ALASKA COLLABORATION



Note: Dr. Heidi Pearson, University of Alaska Southeast, and her Marine Mammal class offered to help PEG with identifying the impacts of plastic packing bands on pinnipeds and finding possible solutions. An excerpt of the report is below. The entire report can be found on our shared <u>Google</u> <u>Drive Newsletters 2021</u>. **THANK YOU** to Heidi and to these amazing students for their hard work and their excellent summary report.

Identifying pinniped entanglement problems and finding solutions

Authors: Professor Heidi Pearson, Alyssa Baldwin, Olive M. Brend, Delton Claggett, Sabrina Croft, Jason Hock, Trinity Johnson, Taylor Ranney, Sarah Rauchenstein, Stebi Sanchez



Introduction

Plastic pollution is a growing global problem with far-reaching consequences. The increase in plastics in recent decades have given rise to the phenomenon of entanglements, the main focus of the Pinniped Entanglement Group. These entanglements are cause for concern for the health and wellbeing of individual pinnipeds and their populations, which in turn affects the ecosystem as a whole. Plastic packaging bands, also called packaging loops or packaging straps, are commonly used to strap boxes closed. In the aquatic environment, they easily wrap around pinniped necks but are very difficult to break off. Individuals often encounter difficulty in escaping the pollutants, and non-professional human interference can potentially be deadly. In light of this, it has become increasingly important to identify methods and alternatives that work towards decreasing entanglement events. These alternatives must have the support of both the general public and the industries that contribute to marine pollution most. Some essential actions to take in order to effectively mitigate pinniped entanglement threats include reducing current plastic pollution, increasing community outreach, and implementing potential biodegradable solutions.





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Identifying pinniped entanglement... continued

Current Pollution

One solution to the current plastic pollution problem would be to use microbial degradation. There are enzymes and microorganisms that biodegrade plastics, and therefore would be useful to introduce to ecosystems with high rates of plastic pollution. Microbial degradation occurs in four steps: microbial biofilm formation, biodeterioration, biofragmentation, and mineralization. The whole process results in a reintegration of "natural" parts of plastics into the environment, negating any macro- or micro-plastic pollution. Some studies focus on the cold marine environment for those microorganisms which can survive those tough environments. However, the interactions between microorganisms and plastics in the cold marine environment is understudied and requires further research and experimentation.

An updated list of over 50 technologies that may help with current pollution can be found at <u>https://nicholasinstitute.duke.edu/plastics-technology-inventory</u>. These technologies can help with pollution by either preventing or collecting plastics; 14 of these technologies were about preventing plastics while 38 were collection methods. While 39 of these are focused on macroplastics, nine focused on microplastics and four targeted both types of plastics. These technologies paired with other solutions, like legislation, can pose a solution to the problem of plastic pollution.

Biodegradable Solutions

A plethora of materials are in development to serve as biodegradable replacements for plastic, including cellulose nanocrystals (CNCs), a fairly tough, rigid, and biodegradable substance. CNCs are derived from various organic materials, including plants, algae, bacteria, and even tunicates. This makes them among the simplest alternatives to acquire. Their chemical versatility gives them many applications, including the possibility of combining them with traditional plastics to increase their tensile strength while still enhancing biodegradability. This could be applied to packaging bands to facilitate easier deterioration, preventing them from getting entangled around otariid necks, or allowing pinnipeds to break free of them quicker. Cellulose has also been used to create biodegradable packaging bands, and a CNC coating can enhance strength and durability, making them more comparable to the conventional plastic packaging band. Additionally, when CNCs are combined with hyperbranched lignin (H-lignin), another naturally occurring material, tensile strength is improved even more, and the dangers of microplastics emerging from deteriorating plastics is further mitigated since CNC/H-lignin composites are naturally-occurring materials and pose less risk to marine trophic levels, especially corals.





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Identifying pinniped entanglement... continued

This doesn't come without a price, however: to get these bands widely accepted in the marketplace, output would need upscale considerably to decrease price per unit.

Another biodegradable option is to create biopolymers from natural materials such as plant products. Vegetable-derived fructose has proven itself a promising material for creating a sustainable biopolymer for packaging. In research experiments, the resulting material is noted to work better than synthetic polymers and can withstand a variety of stressors. The biopolymer is deemed sustainable due to its small carbon footprint and lower output of greenhouse gases. Unfortunately, this material is still considered a pollutant while the lengthy degradation period of 100+ days is taking place, so it would not be a fast solution to entanglements. An even more promising packaging alternative is to create a bioplastic from starches or chitin and cellulose, as mentioned above. These are all cheaply-sourced materials that can be cross-linked to create a highly-biodegradable bioplastic that is strong enough to use for packaging. Corn and rice starch bioplastics already make up 50% of bioplastics currently in use, so this is an alternative that is already accepted and trusted in some markets. This material is easily-biodegradable, durable, and low-cost. Similarly, chitin and cellulose bioplastics have these same characteristics but are also versatile and can easily be manipulated to form more useful shapes or more durable products. Biodegradable alternatives to synthetic plastics that are commonly used for packaging are abundant and ready to be introduced to the world. Using even one of these solutions to decrease pinniped entanglement incidents could be very effective.

Conclusion

Pinniped entanglement and marine pollution can be mitigated substantially by using a multifaceted approach incorporating the ideas presented above, along with many other novel concepts. This will obviously be no small task, given that entanglements are still a regularity despite the hard work PEG and other organizations have already done. Through the persistence and effort of individuals along with the collaboration across global organizations, systemic changes in the actions of governments, corporations, fishermen, and individuals will begin to better the oceans' health and sustainability. It is important to recognize that anyone and everyone can reach out and help in one way or another. Each person has a unique skill-set that they can offer to innovate solutions or help continue those already at play. Through research and work with PEG and similar organizations, as well as global changes that look towards a more environmentally-friendly way of life, the ocean can become a safer place for pinnipeds, humans, and all that inhabit and use its many - END resources-- one piece of plastic picked up at a time.







OUTREACH

How does a sea lion get entangled?

Hi all, Paul Irvin, NOAA Fisheries, made this graphic for us to help us explain how sea lions get entangled. If anyone would like a copy of this in PowerPoint so you can use it in your presentations, please just let me know (<u>kim.raum-Suryan@noaa.gov</u>) and I will share it with you. Thank you!



NOAA Live! Alaska Presentation Recording

Hi all, I recently gave a NOAA Live! Alaska presentation about entangled Steller sea lions leading to Alaska's first Ocean Guardian Schools. NOAA Live! Alaska is a series of webinars that connects NOAA scientists and partners with students, teachers, and Alaska communities.

If you are interested in watching this presentation or any of the amazing presentations that are a part of this series, please go to:

https://www.fisheries.noaa.gov/alaska/outre ach-and-education/noaa-live-Alaska. Thank you, Kim







OUTREACH

Outreach from ORCA Peru

By Carlos Yaipén-Llanos, ORCA PERU

Back in the day, some 20 years ago, Peruvian children did not know about the existence of sea lions along the coast, so the first step was to bring children to meet sea lions by looking at the ocean in a different way. With the development of the Stranding Network, most of the children that have learned from us through their school programs, or have had the experience of finding a sea lion on the beach, are very well sensitized and are the main audience that promotes our emergency hotline. Now those children (and therefore their parents) are more aware of fishing lines on their beaches and the sea lions being affected by them. Today not only can families tell there are sea lions in the ocean, but they also report on nets and strandings on their beaches to our rescue hotline! For 2021, it is our goal to produce more information about the impacts of fishing lines to pinnipeds so there is greater local detection and reporting through the social network.

STEMapalooza in Alaska

By Sue Goodglick, Alaska Dept. of Fish and Game

Two PowerPoint presentations focusing on marine debris and wildlife entanglement in Alaska were provided to the Girl Scouts of Alaska and were shown during the February 2021 STEMapalooza event. The link to NOAA's <u>TRASH TALKS</u> was also provided. Links to all presentations are available on the Alaska Department of Fish and Game Marine Mammal Website (here).



Nothing, it just waved.

WHAT DID THE OCEAN Say to the pirate?





OUTREACH

New Outreach from Alaska

By Kim Raum-Suryan

Hi all, meet "Sammy" – our new inflatable juvenile male Steller sea lion. Many thanks to Andy Peters at the Whale Workshop for making this inflatable Steller sea lion. We will be using Sammy for outreach and eventually for training. The sea lion can be filled with either air or water, depending on need. When we use Sammy in the water from the side of the boat, it will be filled with water to better simulate the weight of a real Steller sea lion. Thank you to Andy for his amazing work. If you are interesting in having an inflatable marine mammal made for your group, please check out the Whale Workshop's website at http://www.whaleworkshop.org/.





when you get, give. when you learn, teach. MAYA ANGELOU

The life you live is the lesson you teach

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Marine Mammal Commission Request for Proposals

https://www.mmc.gov/grants-and-research-survey/current-funding-opportunities/

The Marine Mammal Commission will be accepting proposals until **April 15, 2021** for science in support of marine mammal conservation, protection, research, and management. **Funding requests are limited to \$35,000 USD**.

They are seeking proposals that will further the conservation and management goals of the U.S. Marine Mammal Protection Act (MMPA). Projects addressing human impacts on marine mammals and their ecosystems, or proposing research with clear management applications, are highly encouraged. Additional weight will be given to proposals that: 1) focus on species or population(s) of conservation concern (e.g., designated as depleted under the MMPA or similar legislation; listed under the Endangered Species Act; assigned to an IUCN Red List threatened category), or 2) increase the inclusion or representation of people from underrepresented groups in marine mammal research, management, or conservation. Projects that leverage other resources, have matching funds, or are collaborative in nature are strongly encouraged.

REQUIRED: All projects MUST include an outreach, communication, or engagement component that furthers marine mammal conservation or management efforts. This may include, for example, engaging with government agencies, bringing together stakeholders, including industry or the maritime or fishing community, or providing training opportunities. Conference presentations and publications, while encouraged, do NOT meet this requirement.

ELIGIBILITY: Applicants from both within the U.S. as well as outside the U.S. are eligible to apply (including both non-U.S. citizens and those affiliated with non-U.S. institutions).

Proposals will be accepted until April 15, 2021.







ANNOUNCEMENTS

Society for Marine Mammalogy Conference

Palm Beach, Florida

The very first fully hybrid conference of the Society for Marine Mammalogy <u>SMM2021</u> will be held on December 13-17, 2021 with workshops held December 11 & 12 prior to the conference. We will be submitting an abstract to host another PEG workshop during this conference. Stay tuned for further developments.

Using kelp as a bioplastic

A bioplastic is a type of plastic that can be made from plant starches or gelatins/agars. They are better for the environment because they are not derived from petroleum. They can also be easily made at home with a few simple ingredients and a stove! Check out Bioplastic with agar-

https://www.wikihow.com/Make-Bioplastic#Using-Gelatin-or-Agar or

Basic seaweed bioplastichttps://www.youtube.com/watch?v=7BMtchgejK0

World Oceans Day is June 8th

To see an event planning toolkit, go to: https://worldoceanday.org/resources/2021-eventplanning-toolkit/

NEXT STEPS PLANNED

- Next PEG call: <u>April 23</u>
- Continue PEG strategic plan
- Continue PEG subgroups
- Plan for PEG workshop

The Starfish Story

One day a man was walking along the beach, when he noticed a boy hurriedly picking up and gently throwing things into the ocean.

Approaching the boy, he asked, "Young man, what are you doing?"

The boy replied, "Throwing starfish back into the ocean. The surf is up and the tide is going out. If I don't throw them back, they'll die."

The man laughed to himself and said, "Don't you realize there are miles and miles of beach and hundreds of starfish. You can't make any difference!"



After listening politely, the boy bent down, picked up another starfish, and threw it into the surf. Then, smiling at the man, he said

"I made a difference to that one."







Name	Affiliation	Country	E-mail
Angela Amlin	NOAA Fisheries	USA	angela.amlin@noaa.gov
Erika Ammann	NOAA Fisheries	USA	erika.ammann@noaa.gov
Bud Antonelis	Nā Kama Kai	USA	bantonelis@aol.com
Burton Balkind	Marine Mammal Alliance of Nantucket	USA	sprucecool@yahoo.com
Daniela Barcenas de la Cruz	The Marine Mammal Center	Mexico	barcenasdaniela@gmail.com
Shannon Barber-Meyer	USGS	USA	sbarber-meyer@usgs.gov
Michelle Barbieri	NOAA Fisheries	USA	michelle.barbieri@noaa.gov
Arne Bjoerge	Institute of Marine Research	Norway	arne.bjoerge@hi.no
Andrea Bogolmoni	Woods Hole Oceanographic Institute	USA	abogomolni@gmail.com
Laura Boren	Dept. of Conservation	New Zealand	lboren@doc.govt.nz
Madison Boynton	UC Davis	USA	mkboynton@ucdavis.edu
Hallie Burrell		USA	burrellhallie@yahoo.com
Sarah Callan	Mystic Aquarium	USA	scallan@mysticaquarium.org
Tamara Cooper	Cornish Seal Sanctuary	UK	tamara.cooper@merlinentertainments.biz
Cloe Cummings	Marine Conservation Program	Tasmania	Cloe.Cummings@dpipwe.tas.gov.au
Kit Cunningham	University of Alaska Southeast	USA	Kit.cunningham94@gmail.com
Barb Lake	NOAA Fisheries	USA	barbara.lake@noaa.gov
Tessa Danelesko	Vancouver Aquarium	USA	tessa.danelesko@vanaqua.org
Janet Dickey	Northcoast Marine Mammal Center	USA	Hrh152y@yahoo.com
Robert A. DiGiovanni	Atlantic Marine Conservation	USA	rdigiovanni@amseas.org
Lynda Ada Doughty	Marine Mammals of Maine	USA	Idoughty@mmome.org
Stephen Drabkin	Ranger, Great Point, Nantucket	USA	shdrabkin@comcast.net
Naude & Katja Dreyer	Ocean Conservation Namibia	Namibia	info@ocnamibia.org
Jillian Drury	Marine Mammal Alliance of Nantucket	USA	jillian@nantucketmman.org
Natalie Dyer	Sealife Trust	UK & Iceland	Natalie.Dyer@sealifetrust.com
Claire Fraser	Cornish Seal Sanctuary	UK	Claire.Fraser@merlinentertainments.biz
Deborah Fauquier	NOAA Fisheries	USA	Deborah.fauquier@noaa.gov
Greg Frankfurter	UC Davis	USA	gfrankfurter@gmail.com
Elsa Coria Galindo	Universidad Nacional Autónoma de México	Mexico	coriagalindo@yahoo.com.mx
Mendy Garron	NOAA Fisheries	USA	Mendy.garron@noaa.gov
Machteld Geut		Netherlands	macgeut@hotmail.com
Kilali Gibson	NOAA Fisheries	USA	kilali.gibson@noaa.gov
Tobias Glidden	Nantucket	USA	Integrity11@gmail.com
Anna Goleva	Klub Boomerang	Russia	Anna.goleva@hotmail.com

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Name	Affiliation	Country	E-mail
Sue Goodglick	Alaska Dept. of Fish & Game	USA	sue.goodglick@alaska.gov
Julia Hager	Mountain2Ocean.org	Germany	julia@mountain2ocean.org
CT Harry	International Fund for Animal Welfare	USA	charry@ifaw.org
Noel Hawkins	Scottish Wildlife Trust	Scotland	nhawkins@scottishwildlifetrust.org.uk
Elizabeth Hogan	Contractor	USA	ehogan97@gmail.com
Fred-Jay Ivanoff	Norton Sound Economic Dev. Co.	USA	fredjay@nsedc.com
Dan Jarvis	British Divers Marine Life Rescue	UK	dan@bdmlr.org.uk
Mandy Keogh	NOAA Fisheries	USA	mandy.keogh@noaa.gov
Lauri A Jemison	Alaska Dept. of Fish & Game	USA	lauri.jemison@alaska.gov
Aleria Jensen	NOAA Fisheries	USA	aleria.jensen@noaa.gov
Shawn Johnson	Sea Change Health	USA	shawn@seachangehealth.orgmobile
Mark Keenan	Melbourne Zoo	Australia	MKeenan@zoo.org.au
Cathy King	World Vets	USA	drcathy@worldvets.org
Jamie King	Fisherman, biologist	USA	jamieking41@gmail.com
Dyanna Lambourn	Washington Dept. of Fish and Wildlife	USA	Dyanna.Lambourn@dfw.wa.gov
Mary-Anne Lea	Ecology & Biodiversity Center, Univ. of Tasmania	Tasmania	maryanne.lea@utas.edu.au
Lauri Leach	University of Maine	USA	laurileach@gmail.com
Kyunglee Lee		Korea	dorijjang19@gmail.com
Scott Leonard	Marine Mammal Alliance of Nantucket	USA	nantucketmarinemammals@gmail.com
Valerie Leonard	Marine Mammal Alliance of Nantucket	USA	valerieleonard@comcast.net
YongLong Liu	Renduocean.org	China	liuyonglong@renduocean.org
Carlos Yaipen Llanos	ORCA PERU	Peru	orcarlos@orca.org.pe
Kristy Long	NOAA Fisheries	USA	kristy.long@noaa.gov
Kendra Luckow	ORCA	Peru	kendraluckow@gmail.com
Barbara Mahoney	NOAA Fisheries	USA	barbara.mahoney@noaa.gov
Peter Mahoney	NOAA Fisheries	USA	peter.mahoney@noaa.gov
Yulia Malygina	Ocean Friends, Sahkalin	Russia	sakh.m.m.rescue@mail.ru
Stephen Manley	NOAA Fisheries	USA	stephen.manley@noaa.gov
Bridget Mansfield	NOAA Fisheries	USA	bridget.mansfield@noaa.gov
Colin McFadyan	British Divers Marine Life Rescue	UK	aberdeen@bdmlr.org.uk
Casey Mclean	SR3	USA	cmclean@sealifer3.org
Rebecca McIntosh	Phillip Is. Nature Parks	Australia	rmcintosh@penguins.org.au
Sarah Michael	Dept. of Primary Industries, Water, and Govt. Tasmania	Tasmania	sarah.michael@dpipwe.tas.gov.au
Aliza Milette-Winfree	NOAA Fisheries	USA	aliza.milette@noaa.gov





Namo	Affiliation	Country	E-mail
Andro Moon	Anniation Institute of Marine Research	Norway	E-IIIali
Andre Moen		INDIWay	andre.moan@ni.no
Maxine Montello	Riverhead Foundation, New York	USA	mmontello@riverheadfoundation.org
Shane Moore	Moore and Moore Films	USA	moorefilms@wyoming.com
Peter Murphy	NOAA Affiliate	USA	peter.murphy@noaa.gov
Dan Namur	NOAA Fisheries	USA	dan.namur@noaa.gov
Stephanie Norman	Marine-Med	USA	stephanie@marine-med.com
Tory O'Connell	Sitka Sound Science Center	USA	voconnell@sitkascience.org
Michelle Oakley	Yukon Vet	Canada	hainesvet@gmail.com
Ocean Friends	Ocean Friends, Sahkalin	Russia	Sakh.m.m.rescue@mail.ru
Doris Oliva	Universidad de Valparaiso	Chile	doris.oliva@uv.cl
Mimi Olry	State of Hawaii	USA	Mimi.olry@hawaii.gov
Andy Ottaway	The Seal Protection Action Group	UK	andyottaway@campaign-whale.org
Veronica Padula	Tribal Government of St. Paul Island	USA	vmpadula@aleut.com
Kristen Patchett	International Fund for Animal Welfare	USA	kpatchett@ifaw.org
Alexandra Pearce	Sealife Trust	UK & Iceland	Alexandra.Pearce@sealifetrust.com
Heidi Pearson	University of Alaska Southeast	USA	hcpearson@uas.alaska.edu
Blair Perkins		USA	surfdive@comcast.net
Carolin Philipp	University of Veterinary Medicine, Hannover, Foundation	Germany	Carolin.Philipp@tiho-hannover.de
James Powell			jwbpowell@gmail.com
Kim Raum- Survan	NOAA Fisheries	USA	kim.raum-suryan@noaa.gov
Jim Rice	Oregon State University	USA	jim.rice@oregonstate.edu
Rich Riels	Sea Mammal Education Learning & Training Society S.M.E.L.T.S.	USA	hayden2748@gmail.com
Kathryn S. Rose	International Fund for Animal Welfare	USA	krose@ifaw.org
Teri Rowles	NOAA Fisheries	USA	Teri.Rowles@noaa.gov
Ana Rubio Garcia	Sealcentre Pieterburen	Netherlands	ana.rubiogarcia@zeehondencentru m.nl
Doug Sandilands	SR3	USA	dsandilands@sealifer3.org
Anna Salazar	Socioentro Distorburon	Netherlands	asalazarcasals@gmail.com
Casals Christelle Secolli		Spain	abriatalla accaelli@batmail.com
Kata Cavara		Spain	
Rale Savage			
Sue Sayer			sue @ comwallsealgroup.co.uk
Langlig Schub	INUAA FISHEIIES		iachuh@myetiooguarium ara
		USA	jschunemysicaquanum.org
Vincent Serbruyns	A Seal - Zeehondenopvang Stellendam	Netherlands	vincent.serbruyns@aseal.nl
Lisa Sette	Center for Coastal studies	USA	sette@coastalstudies.org





Name	Affiliation	Country	E-mail
Julie Scheurer	NOAA Fisheries	USA	Julie.scheurer@noaa.gov
Kim Schulam	Nantucket Marine Mammal Conservation	USA	schulam@yahoo.com
Alicia Schuler	NOAA Fisheries	USA	Alicia.schuler@noaa.gov
Sarah Sharp	International Fund for Animal Welfare	USA	ssharp@ifaw.org
Gay Sheffield	Marine Advisory Program – Alaska SeaGrant	USA	ggsheffield@alaska.edu
Mark Simmonds	Humane Society International	UK	mark.simmonds@sciencegyre.co.uk
Gregory Thomas St. Aubin	Marine Mammal Alliance of Nantucket	USA	gstaubbs@gmail.com
Stephen St. Pierre	Nantucket Marine Mammal Conservation	USA	greasyluck@aol.com
Abbey Steffens		USA	abbeysteffens@gmail.com
Mark Sullivan	NOAA Fisheries	USA	Mark.sullivan@noaa.gov
Wendy Szaniszlo	Research Associate, Vancouver Aquarium	Canada	wendysza@hotmail.com
Jackie Taylor	NOAA Fisheries	USA	jaclyn.taylor@noaa.gov
Lou Taylor	National Park Service	USA	loutaylor907@gmail.com
Sam Thalmann	Marine Conservation Program	Tasmania	Sam.Thalmann@dpipwe.tas.gov.au
Jamie Thomton	NOAA Fisheries	USA	Jamie.thomton@noaa.gov
Bianca Unger	TiHo Hannover	Germany	Bianca.Unger@tiho-hannover.de
Peter Van Der Wolf	Klub Boomerang	Russia	vanderwolfpeter@gmail.com
Kristy Volker	International Fund for Animal Welfare	USA	kvolker@ifaw.org
Natalie Waddington	British Divers Marine Life Rescue	UK	natalie@bdmlr.org.uk
Dominique Walk	Marine Mammals of Maine	USA	dwalk@mmome.org
Amanda Warlick	NOAA Fisheries	USA	amanda.j.warlick@gmail.com
Rob Webster	Planet Love Life	USA	info@planetlovelife.com
Brittany Webster	Planet Love Life	USA	info@planetlovelife.com
Kristin Wilkinson	NOAA Fisheries	USA	kristin.wilkinson@noaa.gov
Sarah Wilkin	NOAA Fisheries	USA	Sarah.wilkin@noaa.gov
Michael Williams	NOAA Fisheries	USA	michael.williams@noaa.gov
Ted Willke	Intel	USA	tlwillke@comcast.net
Sadie Wright	NOAA Fisheries	USA	sadie.wright@noaa.gov
Kathy Zagzebski	National Marine Life Center	USA	kzagzebski@nmlc.org
Dave Zahniser		USA	davezahniser@icloud.com