

In this review:

- A. Recent articles – no abstract
- B. Recent articles with abstracts

O/A denotes an open access article or journal

A. Recent articles – no abstract available

Blok, A. **Contesting global norms: politics of identity in Japanese pro-whaling counter-mobilization.** *Global Environmental Politics* 8(2): 39-66, 2008.

Yang, W.C., Chou, L.S., Jepson, P.D., Brownell, R.L., Cowan, D., Chang, P.H., Chiou, H.I., Yao, C.J., Yamada, T.K., Chiu, J.T., Wang, P.J., and Fernandez, A. **Unusual cetacean mortality event in Taiwan, possibly linked to naval activities.** *Veterinary Record* 162(6): 184-186, 2008.

B. Recent articles with abstracts

Gebbink, W.A., Sonne, C., Dietz, R., Kirkegaard, M., Born, E.W., Muir, D.C.G., and Letcher, R.J. **Target tissue selectivity and burdens of diverse classes of brominated and chlorinated contaminants in polar bears (*Ursus maritimus*) from East Greenland.** *Environmental Science and Technology* 42(3): 752-759, 2008.

Notes: The tissue-specific composition of sum classes of brominated and chlorinated contaminants and metabolic/degradation byproducts was determined in adult male and female polar bears from East Greenland. Significantly ($p < 0.05$) higher concentrations of S-PCBs, various other organochlorines such as Σ -CHL, p,p' -DDE, Σ -CBz, Σ -HCHs, octachlorostyrene (OCS), Σ -mirex, dieldrin, the flame retardants Σ -PBDEs, and total-(α)-hexabromocyclododecane (HBCD), Σ -methylsulfonyl (MeSO₂)-PCBs and 3-MeSO₂- p,p' -DDE, were found in the adipose and liver tissues relative to whole blood and brain. In contrast, Σ -hydroxyl (OH)-PCB, 4-OH-heptachlorostyrene and Σ -OH-PBDE concentrations were significantly highest ($p < 0.05$) in whole blood, whereas the highest concentrations of Σ -OH-PBBs were found in the adipose tissue. Based on the total concentrations of all organohalogens in all three tissues and blood, the combined body burden was estimated to be 1.34 ± 0.12 g, where >91% of this amount was accounted for by the adipose tissue alone, followed by the liver, whole blood, and brain. These results show that factors such as protein association and lipid solubility appear to be differentially influencing the toxicokinetics, in terms of tissue composition/localization and burden, of organohalogen classes with respect to chemical structure and properties such as the type of halogenation (e.g., chlorination or bromination), and the presence or absence of additional phenyl group substituents (e.g., MeO and OH groups). The tissue- and blood-specific accumulation (or retention) among organohalogen classes indicates that exposure and any potential contaminant-mediated effects in these polar bears are likely tissue or blood specific.

Jaramillo-Legorreta, A., Rojas-Bracho, L., Brownell, R.L., Read, A.J., Reeves, R.R., Ralls, K., and Taylor, B.L. **Saving the vaquita: Immediate action, not more data.** *Conservation Biology* 21(6): 1653-1655, 2007.

Notes: The recent likely extinction of the baiji (Chinese river dolphin [*Lipotes vexillifer*]) makes the vaquita (Gulf of California porpoise [*Phocoena sinusi*]) the most endangered cetacean. The vaquita has the smallest range of any porpoise, dolphin, or whale and, like the baiji, has long been threatened primarily by accidental deaths in fishing gear (bycatch). Despite repeated recommendations from scientific bodies and conservation organizations, no effective actions have been taken to remove nets from the vaquita's environment. Here, we address three questions that are important to vaquita conservation: (1) How many vaquitas remain? (2) How much time is left to find a solution to the bycatch problem? and (3) Are further abundance surveys or bycatch estimates needed to justify the *immediate* removal of all entangling nets from the range of the vaquita? Our answers are, in short: (1) there are about 150 vaquitas left, (2) there are at most 2 years within which to find a solution, and (3) further abundance surveys or bycatch estimates are not needed. The answers to the first two questions make clear that action is needed now, whereas the answer to the last question removes the excuse of uncertainty as a delay tactic. Herein we explain our reasoning.

Holmes, E.E., Fritz, L.W., York, A.E., and Sweeney, K. **Age-structured modeling reveals long-term declines in the natality of western Steller sea lions.** *Ecological Applications* 17(8): 2214-2232, 2007.

Notes: Since the mid-1970s, the western Steller sea lion (*Eumetopias jubatus*), inhabiting Alaskan waters from Prince William Sound west through the Aleutian Islands, has declined by over 80%. Changing oceanographic conditions, competition from fishing operations, direct human-related mortality, and predators have been suggested as factors driving the decline, but the indirect and interactive nature of their effects on sea lions have made it difficult to attribute changes in abundance to specific factors. In part, this is because only changes in abundance, not changes in vital rates, are known. To determine how vital rates of the western Steller sea lion have changed during its 28-year decline, we first estimated the changes in Steller sea lion age structure using measurements of animals in aerial photographs taken during population surveys since 1985 in the central Gulf of Alaska (CGOA). We then fit an age-structured model with temporally varying vital rates to the age-structure data and to total population and pup counts. The model fits indicate that birth rate in the CGOA steadily declined from 1976 to 2004. Over the same period, survivorship first dropped severely in the early 1980s, when the population collapsed, and then survivorship steadily recovered. The best fitting model indicates that in 2004, the birth rate in the central Gulf of Alaska was 36% lower than in the 1970s, while adult and juvenile survivorship were close to or slightly above 1970s levels. These predictions and other model predictions concerning population structure match independent field data from mark-recapture studies and photometric analyses. The dominant eigenvalue for the estimated 2004 Leslie matrix is 1.0014, indicating a stable population. The stability, however, depends on very high adult survival, and the shift in vital rates results in a population that is more sensitive to changes in adult survivorship. Although our modeling analysis focused exclusively on the central Gulf of Alaska, the western Gulf of Alaska and eastern Aleutians show a similar pattern of declining pup fraction with no increase in the juvenile, or pre-breeding, fraction. This suggests that declining birth rate may be a problem for western Steller sea lions across the Gulf of Alaska and into the Aleutian Islands.

Jackson, J.A., Patenaude, N.J., Carroll, E.L., and Baker, C.S. **How few whales were there after whaling? Inference from contemporary mtDNA diversity.** *Molecular Ecology* 17(1): 236-251, 2008.

Notes: Reconstructing the history of exploited populations of whales requires fitting a trajectory through at least three points in time: (i) prior to exploitation, when abundance is assumed to be at the maximum allowed by environmental carrying capacity; (ii) the point of minimum abundance or 'bottleneck', usually near the time of protection or the abandonment of the hunt; and (iii) near the present, when protected populations are assumed to have undergone some recovery. As historical abundance is usually unknown, this trajectory must be extrapolated according to a population dynamic model using catch records, an assumed rate of increase and an estimate of current abundance, all of which have received considerable attention by the International Whaling Commission (IWC). Relatively little attention has been given to estimating minimum abundance (N_{\min}), although it is clear that genetic and demographic forces at this point are critical to the potential for recovery or extinction of a local population. We present a general analytical framework to improve estimates of N_{\min} using the number of mtDNA haplotypes (maternal lineages) surviving in a contemporary population of whales or other exploited species. We demonstrate the informative potential of this parameter as an *a posteriori* constraint on Bayesian logistic population dynamic models based on the IWC Comprehensive Assessment of the intensively exploited southern right whales (*Eubalaena australis*) and published surveys of mtDNA diversity for this species. Estimated historical trajectories from all demographic scenarios suggested a substantial loss of mtDNA haplotype richness as a result of 19th century commercial whaling and 20th century illegal whaling by the Soviet Union. However, the relatively high rates of population increase used by the IWC assessment

predicted a bottleneck that was implausibly narrow (median, 67 mature females), given our corrected estimates of N_{\min} . Further, high levels of remnant sequence diversity (theta) suggested that pre-exploitation abundance was larger than predicted by the logistic model given the catch record, which is known to be incomplete. Our results point to a need to better integrate evolutionary processes into population dynamic models to account for uncertainty in catch records, the influence of maternal fidelity on metapopulation dynamics, and the potential for inverse density dependence (an 'Allee effect') in severely depleted populations.

Kannan, K., Agusa, T., Evans, T.J., and Tanabe, S. **Trace element concentrations in livers of polar bears from two populations in Northern and Western Alaska.** *Archives of Environmental Contamination and Toxicology* 53(3): 473-482, 2007.

Notes: Concentrations of 20 trace elements (V, Cr, Mn, Co, Cu, Zn, Rb, Sr, Mo, Ag, Cd, In, Sn, Sb, Cs, Ba, Hg, Tl, Pb, and Bi) were measured in livers of polar bears (*Ursus maritimus*) collected from Northern and Western Alaska from 1993 to 2002 to examine differences in the profiles of trace metals between the Beaufort Sea (Northern Alaska) and the Chukchi Sea (Western Alaska) subpopulations in Alaska. Among the trace elements analyzed, concentrations of Cu (50-290 µg/g, dry wt) in polar bear livers were in the higher range of values that have been reported for marine mammals. Concentrations of Hg in polar bears varied widely, from 3.5 to 99 µg/g dry wt, and the mean concentrations in polar bears were comparable to concentrations reported previously for several other species of marine mammals. Mean concentrations of Pb and Cd were 0.67 and 1.0 µg/g dry wt, respectively; these concentrations were lower than levels reported elsewhere for polar bears from Greenland and Canada. Age- and gender-related variations in the concentrations of trace elements in our polar bears were minimal. Concentrations of Hg decreased slowly in samples collected during 1993-2002, whereas Cd and Pb concentrations were found to be stable or slowly increasing, in the livers of Alaskan polar bears. Concentrations of Ag, Bi, Ba, Cu, and Sn were significantly higher in the Chukchi Sea subpopulation than in the Beaufort Sea subpopulation. Concentrations of Hg were significantly higher in the Beaufort Sea subpopulation than in the Chukchi Sea subpopulation. Differences in the profiles and concentrations of Hg, Ag, Bi, Ba, Cu, and Sn suggest that the sources of exposure to these trace elements between Western and Northern Alaskan polar bears are different, in agreement with findings reported earlier for several organic contaminants.

Taylor, M.K., Laake, J., McLoughlin, P.D., Cluff, H.D., Born, E.W., Rosing-Asvid, A., and Messier, F. **Population parameters and harvest risks for polar bears (*Ursus maritimus*) of Kane Basin, Canada and Greenland.** *Polar Biology* 31(4): 491-499, 2008.

Notes: We estimated demographic parameters and current harvest risks for a population of polar bears (*Ursus maritimus* Phipps) inhabiting northern Smith Sound and Kane Basin, Canada and Greenland. Our demographic analysis included a detailed assessment of age- and sex-specific survival and recruitment from 141 marked polar bears, using information contained within the standing age distribution of captures and mark-recapture analysis. Total survival rates ($\bar{x} \pm 1$ SE) for females were: 0.374 ± 0.180 (cubs), 0.686 ± 0.157 (ages 1-4), and 0.967 ± 0.043 (ages 5+). Mean litter size was 1.67 ± 0.08 cubs. Females did not reproduce until at least age 6, which is late compared to other populations of polar bears. The model-averaged, mark-recapture estimate of mean abundance (± 1 SE) for years 1994-1997 was 164 ± 35 bears. We incorporated demographic parameters and their variances into a harvest risk analysis (i.e., a stochastic, harvested population viability analysis, PVA). Results suggest that polar bears in the region were severely over-harvested during the mark-recapture interval (1992-1997). The current status of the population is unknown.

Weilgart, L.S. **The impacts of anthropogenic ocean noise on cetaceans and implications for management.** *Canadian Journal of Zoology* 85(11): 1091-1116, 2007.

Notes: Ocean noise pollution is of special concern for cetaceans, as they are highly dependent on sound as their principal sense. Sound travels very efficiently underwater, so the potential area impacted can be thousands of square kilometres or more. The principal anthropogenic noise sources are underwater explosions (nuclear and otherwise), shipping, seismic exploration by mainly the oil and gas industries, and naval sonar operations. Strandings and mortalities of especially beaked whales (family Ziphiidae) have in many cases been conclusively linked to noise events such as naval maneuvers involving tactical sonars or seismic surveys, though other cetacean species may also be involved. The mechanisms behind this mortality are still unknown,

but are most likely related to gas and fat emboli at least partially mediated by a behavioral response, such as a change in diving pattern. Estimated received sound levels in these events are typically not high enough to cause hearing damage, implying that the auditory system may not always be the best indicator for noise impacts. Beaked whales are found in small, possibly genetically isolated, local populations that are resident year-round. Thus, even transient and localized acoustic impacts can have prolonged and serious population consequences, as may have occurred following at least one stranding. Populations may also be threatened by noise through reactions such as increased stress levels, abandonment of important habitat, and "masking" or the obscuring of natural sounds. Documented changes in vocal behavior may lead to reductions in foraging efficiency or mating opportunities. Responses are highly variable between species, age classes, behavioral states, etc., making extrapolations problematic. Also, short-term responses may not be good proxies of long-term population-level impacts. There are many examples of apparent tolerance of noise by cetaceans, however. Noise can also affect cetaceans indirectly through their prey. Fish show permanent and temporary hearing loss, reduced catch rates, stress, and behavioral reactions to noise. Management implications of noise impacts include difficulties in establishing "safe" exposure levels, shortcomings of some mitigation tools, the need for precaution in the form of reducing noise levels and distancing noise from biologically important areas, and the role of marine protected areas and monitoring in safeguarding cetaceans especially from cumulative and synergistic effects.

Krahn, M.M., Hanson, M.B., Baird, R.W., Burrows, D.G., Emmons, C.K., Ford, J.K.B., Jones, L.L., Noren, D.P., Ross, P.S., Schorr, G.S., Collier, T.K., and Boyer, R.H. **Persistent organic pollutants and stable isotopes in biopsy samples (2004/2006) from Southern Resident killer whales.** *Marine Pollution Bulletin* 54(12): 1903-1911, 2007.

Notes: "Southern Resident" killer whales include three "pods" (J, K and L) that reside primarily in Puget Sound/Georgia Basin during the spring, summer and fall. This population was listed as "endangered" in the US and Canada following a 20% decline between 1996 and 2001. The current study, using blubber/epidermis biopsy samples, contributes contemporary information about potential factors (i.e., levels of pollutants or changes in diet) that could adversely affect Southern Residents. Carbon and nitrogen stable isotopes indicated J- and L-pod consumed prey from similar trophic levels in 2004/2006 and also showed no evidence for a large shift in the trophic level of prey consumed by L-pod between 1996 and 2004/2006. ΣPCBs decreased for Southern Residents biopsied in 2004/2006 compared to 1993-1995. Surprisingly, however, a three-year-old male whale (J39) had the highest concentrations of ΣPBDEs, ΣHCHs and HCB. POP ratio differences between J- and L-pod suggested that they occupy different ranges in winter.

Zagrebelski, S.V., Fomin, V.V., and Burdin, A.M. **Dynamics of abundance and population structure of sea otters, *Enhydra lutris L.*, on the Commander Archipelago and activity of their migrations between Islands.** *Russian Journal of Ecology* 39(1): 41-47, 2008.

Notes: Fluctuations in the abundance of insular groups of sea otters on the Commander Archipelago are analyzed with regard to changes in meteorological conditions. The main factors responsible for the abrupt decline of the Bering Sea group between 2002 and 2004 are discussed. A statistically significant correlation has been revealed between fluctuations of sea otter abundance and the cycles of solar activity in the period since 1992. Changes in the age and sex structure of the insular groups of sea otters are evaluated.

Tunez, J.I., Cappozzo, H.L., and Cassini, M.H. **Natural and anthropogenic factors associated with the distribution of South American sea lion along the Atlantic coast.** *Hydrobiologia* 598: 191-202, 2008.

Notes: The aim of this work was to analyse those characteristics of the Atlantic coast that are associated with distribution, abundance and breeding activity of *Otaria flavescens* at three ecological scales. We followed a research strategy that consists in looking at the variables that are associated with the pattern of distribution at regional and landscape scales, instead of following local population in time. We used bibliographic data of censuses carried out between 1946 and 1997 and a Geographic Information System (GIS) to integrate information proceeding from censuses and different environmental variables. At a regional scale, we found that the distribution of breeding colonies did not vary in the period of time analysed and was associated with the pattern of occupation of the coast and the tide width. There was a significant decrease in abundance between 1946 and 1997. In 'north-central Patagonia', the segment of coast with the highest number of sea lions in Argentina, distribution of colonies was associated with islands availability and negatively correlated with places where anthropogenic

disturbance was high. At a local scale, breeding colonies were positively associated with slight sloped coasts and negatively associated to rocky beaches. We identify those characteristics of the coast associated with distribution of breeding colonies of *O. flavescens*, which operate at different ecological and temporal scales.

McClenachan, L and Cooper, A.B. **Extinction rate, historical population structure and ecological role of the Caribbean monk seal.** *Proceedings of the Royal Society of London [B]* 275(1641): 1351-1358, 2008.

Notes: The productivity and biomass of pristine coral reef ecosystems is poorly understood, particularly in the Caribbean where communities have been impacted by overfishing and multiple other stressors over centuries. Using historical data on the spatial distribution and abundance of the extinct Caribbean monk seal (*Monachus tropicalis*), this study reconstructs the population size, structure and ecological role of this once common predator within coral reef communities, and provides evidence that historical reefs supported biomasses of fishes and invertebrates up to six times greater than those found on typical modern Caribbean reefs. An estimated 233 000 - 338 000 monk seals were distributed among 13 colonies across the Caribbean. The biomass of reef fishes and invertebrates required to support historical seal populations was 732-1018 gm⁻² of reefs, which exceeds that found on any Caribbean reef today and is comparable with those measured in remote Pacific reefs. Quantitative estimates of historically dense monk seal colonies and their consumption rates on pristine reefs provide concrete data on the magnitude of decline in animal biomass on Caribbean coral reefs. Realistic reconstruction of these past ecosystems is critical to understanding the profound and long-lasting effect of human hunting on the functioning of coral reef ecosystems.

Vanderlaan, A.S. M., Taggart, C.T., Serdynska, A.R., Kenney, R.D., and Brown, M.W. **Reducing the risk of lethal encounters: vessels and right whales in the Bay of Fundy and on the Scotian Shelf.** *Endangered Species Research* 4(3): 283-297, 2008. **O/A**

Notes: The North Atlantic right whale *Eubalaena glacialis* is endangered, in part, due to vessel-strike mortality. We use vessel traffic and right whale survey data (~ 3 nautical miles [n miles], ~ 5.6 km resolution) for the Bay of Fundy and on the Scotian Shelf (northwest Atlantic) to determine the relative risk of lethal vessel encounters by using 2 estimates: (1) the event-the relative probability of a vessel encountering a right whale, and (2) the consequence-the probability of a lethal injury arising from an encounter. For the Bay of Fundy region our estimates demonstrate that the relative risk of lethal collision could be reduced by 62% by means of an amendment to the traffic separation scheme (TSS) that intersects a Right Whale Conservation Area. In the Roseway Basin region of the Scotian Shelf, the majority of vessels navigate outside of a Right Whale Conservation Area, although the highest relative risk is concentrated within the Conservation Area where fewer vessels navigate at greater speed. Here, our estimates demonstrate that a seasonal recommendatory area to be avoided (ATBA) could be designed to reduce the risk imposed by vessels upon right whales in the region. Our estimates contributed to the International Maritime Organisation (IMO) adoption of a TSS amendment in the Bay of Fundy and an ATBA on the Scotian Shelf. Thus, the goal of achieving the greatest reduction in the risk of lethal vessel-encounters with whales, balanced by some minimal disruption to vessel operations while maintaining safe navigation, can be achieved.

Gregg, E.J., Nichol, L.M., Watson, J.C., Ford, J.K.B., and Ellis, G.M. **Estimating carrying capacity for sea otters in British Columbia.** *Journal of Wildlife Management* 72(2): 382-388, 2008.

Notes: We estimated carrying capacity for sea otters (*Enhydra lutris*) in the coastal waters of British Columbia, Canada, by characterizing habitat according to the complexity of nearshore intertidal and sub-tidal contours. We modeled the total area of complex habitat on the west coast of Vancouver Island by first calculating the complexity of the Checleset Bay-Kyuquot Sound (CB-KS) region, where sea otters have been at equilibrium since the mid-1990s. We then identified similarly complex areas on the west coast of Vancouver Island (WCVI model), and adapted the model to identify areas of similar complexity along the entire British Columbia coast (BC model). Using survey data from the CB-KS region, we calculated otter densities for the habitat predicted by the 2 models. The density estimates for CB-KS were 3.93 otters/km² and 2.53 otters/km² for the WCVI and BC models, respectively, and the resulting 2 estimates of west coast of Vancouver Island complex habitat carrying capacity were not significantly different (WCVI model: 5,123, 95% CI = 3,337-7,104; BC model: 4,883, 95% CI = 3,223-6,832). The BC model identified the region presently occupied by otters on the central British Columbia coast, but the amount of coast-wide habitat it predicted (5,862 km²) was relatively small, and the associated carrying capacity estimate (14,831, 95%

CI = 9,790-20,751) was low compared to historical accounts. We suggest that our model captured a type of high-quality or optimum habitat prevalent on the west coast of Vancouver Island, typified by the CB-KS region, and that suitable sea otter habitat elsewhere on the coast must include other habitat characteristics. We therefore calculated a linear, coast-wide carrying capacity of 52,459 sea otters (95% CI = 34,264-73,489) - a more realistic upper limit to sea otters in British Columbia. Our carrying capacity estimates are helping set population recovery targets for sea otters in Canada, and our habitat predictions represent a first step in Critical Habitat identification. This habitat-based approach to estimating carrying capacity is likely suitable for other nonmigratory, density-dependent species.

Sand, P.H. **Japan's 'research whaling' in the Antarctic Southern Ocean and the North Pacific Ocean in the face of the Endangered Species Convention (CITES).** *Review of European Community and International Environmental Law* 17(1): 56-71, 2008.

Notes: Over the past 20 years, Japanese whalers have taken more than 10,000 whales from the Antarctic Southern Ocean and the north Pacific Ocean for 'scientific purposes', under a controversial exemption clause in the International Convention for the Regulation of Whaling (ICRW). After analyzing the relationship of the ICRW regime with other applicable multilateral agreements, this article concludes that Japan's current pelagic 'research whaling' programmes are not only a growing embarrassment for the country's meritorious ongoing research in both polar regions; they are also in open breach of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). In light of different options for international legal action, the author recommends the initiation of 'compliance procedures' - potentially leading to a collective trade embargo - in accordance with CITES Conference Resolution 14.3 (2007).

Bredhult, C., Bäcklin, B.-M., Bignert, A., and Olovsson, M. **Study of the relation between the incidence of uterine leiomyomas and the concentrations of PCB and DDT in Baltic gray seals.** *Reproductive Toxicology* 25(2): 247-255, 2008.

Notes: Exposure to environmental contaminants is believed to be associated with the previously described decrease in the reproduction rate of Baltic gray seals. In the present study the prevalence of uterine leiomyomas was investigated in 257 Baltic gray seal females examined during 1973-2007, in relation to the levels of polychlorinated biphenyls (PCBs) and dichlorodiphenyltrichloroethane (DDT) in Baltic biota, using an estimated exposure index. Additionally, the proliferative activity in leiomyomas, occurrence of corpora lutea, and blubber concentrations of PCB and DDT were investigated in a subset of females. Leiomyomas were only found in females 22-41 years old, at a prevalence of 65%. No differences in blubber concentrations of PCB or DDT were detected between the subset of leiomyoma-bearing females and reference females, but the estimated exposure index indicated that the PCB level in Baltic biota might be related to the leiomyoma prevalence in Baltic gray seal females.

Stoddard, R.A., Atwill, E.R., Gulland, F.M.D., Miller, M.A., Dabritz, H.A., Paradies, D.M., Worcester, K.R., Jang, S., Lawrence, J., Byrne, B.A., and Conrad, P.A. **Risk factors for infection with pathogenic and antimicrobial-resistant fecal bacteria in northern elephant seals in California.** *Public Health Reports* 123(3): 360-370, 2008. **O/A**

Notes: Objectives. The goal of this study was to identify potential environmental and demographic factors associated with *Campylobacter jejuni* (*C. jejuni*), *Salmonella enterica* (*Salmonella* spp.), and antimicrobial-resistant *Escherichia coli* (*E. coli*) infection in northern elephant seals stranded along the California coastline. **Methods.** *E. coli*, *Salmonella* spp., and *C. jejuni* were isolated from rectal swabs from 196 juvenile northern elephant seals, which were found stranded and alive along the California coast and brought to The Marine Mammal Center in Sausalito, California, for rehabilitation. Gender, weight, county where the animal stranded, month stranded, coastal human population density, exposure to sewage outfall or freshwater outflow (river or stream), and cumulative precipitation in the previous 24 hours, seven days, 30 days, 90 days, and 180 days were analyzed as potential risk factors for infection. **Results.** The odds of *C. jejuni* and antimicrobial-resistant *E. coli* were higher in feces of seals stranded at sites with higher levels of freshwater outflow compared with lower levels of freshwater outflow. The odds of *Salmonella* spp. in feces were 5.4 times greater in seals stranded in locations with lower levels of 30-day cumulative precipitation, along with substantially lower odds of *Salmonella* shedding for seals stranded in Monterey or Santa Cruz county compared with seals stranded in regions further north or south of this central California location. **Conclusions.** Juvenile

northern elephant seals that have entered the water are being colonized by antimicrobial-resistant and pathogenic fecal bacteria that may be acquired from terrestrial sources transmitted via river and surface waters.

Kannan, K., Moon, H.-B., Yun, S.H., Agusa, T., Thomas, N.J., and Tanabe, S. **Chlorinated, brominated, and perfluorinated compounds, polycyclic aromatic hydrocarbons and trace elements in livers of sea otters from California, Washington, and Alaska (USA), and Kamchatka (Russia).** *Journal of Environmental Monitoring* 10(4): 552-558, 2008.

Notes: Concentrations of organochlorine pesticides (DDTs, HCHs, and chlordanes), polychlorinated biphenyls (PCBs), polybrominated diphenyl ethers (PBDEs), polycyclic aromatic hydrocarbons (PAHs), perfluorinated compounds (PFCs), and 20 trace elements were determined in livers of 3- to 5-year old stranded sea otters collected from the coastal waters of California, Washington, and Alaska (USA) and from Kamchatka (Russia). Concentrations of organochlorine pesticides, PCBs, and PBDEs were high in sea otters collected from the California coast. Concentrations of DDTs were 10-fold higher in California sea otters than in otters from other locations; PCB concentrations were 5-fold higher, and PBDE concentrations were 2-fold higher, in California sea otters than in otters from other locations. Concentrations of PAHs were higher in sea otters from Prince William Sound than in sea otters from other locations. Concentrations of several trace elements were elevated in sea otters collected from California and Prince William Sound. Elevated concentrations of Mn and Zn in sea otters from California and Prince William Sound were indicative of oxidative stress-related injuries in these two populations. Concentrations of all of the target compounds, including trace elements, that were analyzed in sea otters from Kamchatka were lower than those found from the US coastal locations.

Bechshøft, T.Ø., Wiig, Ø., Sonne, C., Rigét, F.F., Dietz, R., Letcher, R.J., and Muir, D.C.G. **Temporal and spatial variation in metric asymmetry in skulls of polar bears (*Ursus maritimus*) from East Greenland and Svalbard.** *Annales Zoologici Fennici* 45(1): 15-31, 2008. **O/A**

Notes: Fluctuating asymmetry (FA) as a measure of environmental stress was studied in polar bear (*Ursus maritimus*) skulls from East Greenland ($n = 300$, collected 1892-2004) and Svalbard ($n = 391$, collected 1950-2004). Nine metric traits in skull and lower jaw were measured. FA levels of each trait were compared between sex/age groups (subadults, adult females, adult males), periods ($= 1960$, > 1960), and localities (East Greenland, Svalbard). The period ≤ 1960 was chosen to represent a period prior to the appearance of organohalogen pollution in the Arctic. Results indicated that Svalbard bears generally had a higher level of FA than those of East Greenland. Overall, no substantial evidence of a linkage between FA and organohalogens was found. Instead, indications were of subpopulations with declining levels of FA over time, suggesting the existence of positive population level effects powerful enough to overrule the influence of stress caused by global warming, pollution, and overharvesting.

Stirling, A., Richardson, E., Thiemann, G.W., and Derocher, A.E. **Unusual predation attempts of polar bears on ringed seals in the southern Beaufort Sea: possible significance of changing spring ice conditions.** *Arctic* 61(1): 14-22, 2008.

Notes: In April and May 2003 through 2006, unusually rough and rafted sea ice extended for several tens of kilometres offshore in the southeastern Beaufort Sea from about Atkinson Point to the Alaska border. Hunting success of polar bears (*Ursus maritimus*) seeking seals was low despite extensive searching for prey. It is unknown whether seals were less abundant in comparison to other years or less accessible because they maintained breathing holes below rafted ice rather than snowdrifts, or whether some other factor was involved. However, we found 13 sites where polar bears had clawed holes through rafted ice in attempts to capture ringed seals (*Phoca hispida*) in 2005 through 2006 and another site during an additional research project in 2007. Ice thickness at the 12 sites that we measured averaged 41 cm. These observations, along with cannibalized and starved polar bears found on the sea ice in the same general area in the springs of 2004 through 2006, suggest that during those years, polar bears in the southern Beaufort Sea were nutritionally stressed. Searches made farther north during the same period and using the same methods produced no similar observations near Banks Island or in Amundsen Gulf. A possible underlying ecological explanation is a decadal-scale downturn in seal populations. But a more likely explanation is major changes in the sea-ice and marine environment resulting from record amounts and duration of open water in the Beaufort and Chukchi seas,

possibly influenced by climate warming. Because the underlying causes of observed changes in polar bear body condition and foraging behaviour are unknown, further study is warranted.

Aguilar, A., Jessup, D.A., Estes, J., and Garza, J.C. **The distribution of nuclear genetic variation and historical demography of sea otters.** *Animal Conservation* 11(1): 35-45, 2008.

Notes: The amount and distribution of population genetic variation is crucial information for the design of effective conservation strategies for endangered species and can also be used to provide inference about demographic processes and patterns of migration. Here, we describe variation at a large number of nuclear genes in sea otters *Enhydra lutris* ssp. We surveyed 14 variable microsatellite loci and two genes of the major histocompatibility complex (MHC) in up to 350 California sea otters *Enhydra lutris nereis*, which represents ~ 10% of the subspecies' population, and 46 otters from two Alaskan sites. We utilized methods for detecting past reductions in effective population size to examine the effects of near extinction from the fur trade. Summary statistic tests largely failed to find a signal of a recent population size reduction (within the past 200 years), but a Bayesian method found a signal of a strong reduction over a longer time scale (up to 500 years ago). These results indicate that the reduction in size began long enough ago that much genetic variation was lost before the 19th century fur trade. A comparison of geographic distance and pairwise relatedness for individual otters found no evidence of kin-based spatial clustering for either gender. This indicates that there is no population structure, due to extended family groups, within the California population. A survey of population genetic variation found that two of the MHC genes, DQB and DRB, had two alleles present and one of the genes, DRA, was monomorphic in otters. This contrasts with other mammals, where they are often the most variable coding genes known. Genetic variation in the sea otter is among the lowest observed for a mammal and raises concerns about the long-term viability of the species, particularly in the face of future environmental changes.

Medina-Vogel, G., Merino, L.O., Alarcon, R.M., and Vianna, J.D. **Coastal-marine discontinuities, critical patch size and isolation: implications for marine otter conservation.** *Animal Conservation* 11(1): 57-64, 2008.

Notes: The consequences of habitat fragmentation include reduced habitat availability, increased isolation and patch extinction. This study investigates the occupancy patterns of *Lontra felina*, a little known and endangered marine otter, on naturally discontinuous habitat and the relationship between otter occupancy and rocky seashore patches, patch size and isolation and human influences. Marine otter occupancy was determined through direct sightings and the presence/absence of spraints, and measured by logistic regression and general linear models. The study was conducted in Chile between 28°S and 40°S, and consisted of eight study sites. Within these sites, a total of 23 rocky seashore patches, 2.3-63.8 km long, were surveyed from January 2005 to March 2006. The strongest predictors of marine otter occurrence were rocky seashore patches larger than 5 km long and < 6 km apart. These networks should be no farther than 20 km from contiguous (without sandy beaches) rocky seashore patches over 15 km long.

Wang, J.Y., Yang, S.C., Hung, S.K., and Jefferson, T.A. **Distribution, abundance and conservation status of the eastern Taiwan Strait population of Indo-Pacific humpback dolphins, *Sousa chinensis*.** *Mammalia* 71(4): 157-165, 2007.

Notes: In 2002, a small population of Indo-Pacific humpback dolphins, *Sousa chinensis*, was discovered in the coastal waters of the eastern Taiwan Strait. Serious conservation concerns about this population led to a survey of most of the coastal waters of western Taiwan to better understand the status of this population. Surveys were conducted from boats (inshore waters) and a sea-kayak or land-based platforms (littoral waters inshore of large sandbars). Humpback dolphins were sighted 35 times, all within a stretch of inshore waters approximately 100 km (linear distance) and within 2 km from shore (none were observed in littoral waters). Including consideration of other records of this species, the main distribution of these dolphins was estimated to be approximately 515 km² of water off central western Taiwan, where industrialization is a serious and rapidly increasing issue. The population's abundance and density were estimated to be 99 individuals (coefficient of variation 51.6%) and 19.3 individuals/100 km², respectively, which is quite low when compared to the Pearl River estuary population. Assessing this population using the IUCN Red List criteria resulted in a "Critically Endangered" categorization, reinforcing the urgency of the situation.

Robineau, D., Goodall, R.N.P., Pichler, F., and Baker, C.S. **Description of a new subspecies of Commerson's dolphin, *Cephalorhynchus commersonii* (Lacepede, 1804), inhabiting the coastal waters of the Kerguelen Islands.** *Mammalia* 71(4): 172-180, 2007.

Notes: A small population of Commerson's dolphin (*Cephalorhynchus commersonii*), widely separated from the South American main population, inhabits the coastal waters of the Kerguelen Islands (Indian sector of the Antarctic or Southern Ocean). The dolphins of this population differ from those of South America by their pigmentation and morphology. Several arguments, including geographic isolation, morphological difference and genetic data (absence of genetic flow between populations and haplotype differences) lead to formally distinguishing a new subspecies, *Cephalorhynchus commersonii kerguelenensis*, from a nominate subspecies, *Cephalorhynchus commersonii commersonii*.

Compton, R., Goodwin, L., Handy, R., and Abbott, V. **A critical examination of worldwide guidelines for minimising the disturbance to marine mammals during seismic surveys.** *Marine Policy* 32(3): 255-262, 2008.

Notes: Marine seismic exploration has potentially detrimental effects upon marine life and marine mammals in particular. Potential effects range from disturbance that may lead to displacement from feeding or breeding areas, to auditory damage and potential mortality. Nations including the USA, Canada and Brazil have followed the example set by the United Kingdom by introducing guidelines to minimise acoustic disturbance to marine mammals. This paper describes the mitigation measures central to the guidelines currently in place, and identifies the similarities, differences and deficiencies within them. A need for further review by some nations is identified, with a recommendation that an international standard should be produced, benefiting both the geophysical exploration industry and the conservation community.

Iliff, M. **Normalization of the International Convention for the Regulation of Whaling.** *Marine Policy* 32(3): 333-338, 2008.

Notes: In 2006, the pro-whaling group within the International Whaling Commission introduced a programme of "Normalization" in an attempt to address its long held accusation that the Commission is dysfunctional. This paper traces the twin issues of dysfunctionality and normalization; it looks at the progress of the Normalization initiative so far, and assesses its likelihood of success. The paper also briefly examines "Modernization", as an alternative for anti-whaling proponents to Normalization.

Elvin, S.S. and Taggart, C.T. **Right whales and vessels in Canadian waters.** *Marine Policy* 32(3): 379-386, 2008.

Notes: The North Atlantic right whale (*Eubalaena glacialis*) is the most critically endangered large cetacean and is threatened by vessels that travel in their habitats and migration paths. A need to address the endangered population status of the right whale emerges as current management mandates have proven ineffective at preventing vessel-strikes to right whales and current rates of strike-induced mortality can slow or prevent recovery of the species. This paper identifies the need for an internationally acceptable management strategy to minimize vessel-strikes to right whales in Canadian waters.

Iliff, M. **Modernisation of the International Convention for the Regulation of Whaling.** *Marine Policy* 32(3): 402-407, 2008.

Notes: Modernisation of the International Convention for the Regulation of Whaling (ICRW) has long been proposed by some contracting states and outsiders as a way of resolving the "Whaling Dispute" within the International Whaling Commission (IWC); however, both sides of the debate have traditionally been unconvinced that they would gain enough benefit to make the process worthwhile. Since the collapse of the negotiations on the Revised Management Scheme, the pro-whalers within the IWC have pursued an agenda of "Normalisation" of the IWC in an attempt to resume sustainable commercial whaling under what they believe is the true intent and wording of the ICRW. An attractive alternative to

normalisation, particularly to many anti-whalers, is the rewriting of the Convention itself to incorporate many of the elements of more modern conventions, and to remove the clauses in the ICRW which have allowed pro-whaling members of the IWC to carry out whaling operations despite the disapproval of the majority.

Gales, N., Leaper, R., and Papastavrou, V. **Is Japan's whaling humane?** *Marine Policy* 32(3): 408-412, 2008.

Notes: Video taken by Greenpeace of whaling by the Japanese whaling fleet in the Southern Ocean provided a unique opportunity to obtain quantitative data relevant to the welfare aspects of the killing of whales. Catches of 16 individual Antarctic minke whales (*Balaenoptera bonaerensis*) were analysed and in two of these asphyxiation appeared the most likely cause of death. Fewer than one in five whales were killed instantaneously and the average time to death for the remaining whales was around 10 min. The presence of Greenpeace did not result in a reduced accuracy of harpoon shots when compared with previous studies.

Iliff, M. **The international whaling regime post 2007.** *Marine Policy* 32(3): 522-527, 2008.

Notes: Japan's delegation to the International Whaling Commission (IWC) must have gone to the 2007 meeting in Anchorage believing that the prospects of at least the commencement of the process leading to the overturning of the moratorium were better than they had been since 1986. The passing of the St. Kitts and Nevis Declaration at the 2006 Meeting, the gathering momentum of their Normalisation agenda, and their own determination to compromise some of their own agenda in the interest of harmony within the IWC, would have formed the basis of this belief. The reality was totally different. There was no compromise by the anti-whaling group within the meeting who also regained the simple majority position which had been lost in 2006. Japan must face the reality that Normalisation is as far away as ever, and that if the situation within the IWC is to change, it is Japan who must change. This paper canvasses some of the possibilities arising out of the 2007 meeting.
