

In this review:

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

O/A denotes an open access article or journal

A. Recent articles – no abstract available

Greenwood, J.G. **Earlier laying by Black Guillemots *Cephus grylle* in Northern Ireland in response to increasing sea-surface temperature.** *Bird Study* 54: 378-379, 2007.

B. Recent articles with abstracts

Funk, W.C., Mullins, T.D., and Haig, S.M. **Conservation genetics of snowy plovers (*Charadrius alexandrinus*) in the Western Hemisphere: population genetic structure and delineation of subspecies.** *Conservation Genetics* 8(6): 1287-1309, 2007.

Notes: We examined the genetic structure of snowy plovers (*Charadrius alexandrinus*) in North America, the Caribbean, and the west coast of South America to quantify variation within and among breeding areas and to test the validity of three previously recognized subspecies. Sequences (676 bp) from domains I and II of the mitochondrial control region were analyzed for 166 snowy plovers from 20 breeding areas. Variation was also examined at 10 microsatellite loci for 144 snowy plovers from 14 breeding areas. The mtDNA and microsatellite data provided strong evidence that the Puerto Rican breeding group is genetically divergent from sites in the continental U.S. (net sequence divergence = 0.38%; F_{ST} for microsatellites = 0.190). Our data also revealed high levels of differentiation between sites from South America and North America (net sequence divergence = 0.81%; F_{ST} for microsatellites = 0.253). In contrast, there was little genetic structure among breeding sites within the continental U.S. Our results suggest that snowy plovers in Florida should be considered part of *C. a. nivosus* (rather than part of *C. a. tenuirostris*, where they are currently placed), whereas snowy plovers from Puerto Rico should be considered part of *C. a. tenuirostris*. Snowy plovers in South America should remain a separate subspecies (*C. a. occidentalis*). Although U.S. Pacific and Gulf Coast breeding areas were not genetically distinct from other continental U.S. sites, demographic isolation, unique coastal habitats, and recent population declines suggest they warrant special concern.

Angehr, G.R. and Kushlan, J.A. **Seabird and colonial wading bird nesting in the Gulf of Panama.** *Waterbirds* 30(3): 335-357, 2007.

Notes: The Gulf of Panama is a highly productive marine ecosystem at the southern edge of North America. Although the Gulf's aquatic bird populations have been remarked upon by ornithologists for over 50 years, nesting populations have been neither systematically studied nor completely characterized. In 2005 and 2006, the entire Gulf of Panama was inventoried to document the nesting status of seabirds and other colonial waterbirds. Over 50,000 birds of 20 species nesting at 57 sites were documented. Seabirds nested during the dry season, the period of oceanographic upwelling. Coastal colonial waterbirds nested at the end of the dry season and in the early wet season, when inland feeding habitats were optimal. Brown Pelicans (*Pelecanus*

occidentalis) were the most numerous seabird with over 4,800 nests and 10,000 individuals counted. Over 3,600 Neotropic Cormorant (*Phalacrocorax brasilianus*) nests and over 2,200 Magnificent Frigatebird (*Fregata magnificens*) nests were documented. Cattle Egrets (*Bubulcus ibis*) were the most abundant colonial wading birds, followed by Great Egrets (*Ardea alba*). Great Egrets were the first wading birds to nest, Cattle Egrets the last. Seven sites contained over 1,000 nests. Colony locations and numbers differed markedly from the historic literature. Some historic information is erroneous, but other differences reflect changes in distribution. More nesting Brown Pelicans and Sooty Terns (*Sterna fuscata*) and fewer Neotropic Cormorants were found than expected from the literature. New sites documented included some of global or regional conservation importance. This paper presents the first breeding records for Panama of Little Blue Heron (*Egretta caerulea*), Glossy Ibis (*Plegadis falcinellus*), and Bridled Tern (*Sterna anaethetus*), and third record for Cooi Heron (*Ardea cooi*). There is no evidence for long-term declines of seabirds or colonial wading birds in the Gulf of Panama. Populations reaching conservation thresholds globally or biogeographically include Brown Pelican, Bare-throated Tiger-Heron (*Tigrisoma mexicanum*), White Ibis (*Endocimus albus*), Glossy Ibis, and Bridled Tern. The Black-crowned Night-Heron (*Nycticorax nycticorax*) exceeded conservation thresholds for Central America. Six new sites of global importance for bird conservation were identified and the continued importance of another site confirmed. The continued health of the waterbird populations of Panama will depend on environmental education and protection of important colony sites from disturbance and development.

Harper, G.A. **Detecting predation of a burrow-nesting seabird by two introduced predators, using stable isotopes, dietary analysis and experimental removals.** *Wildlife Research* 34(6): 443-453, 2007.

Notes: Burrowing seabirds are vulnerable to extirpation by introduced predators such as rats, but much evidence of predation is circumstantial. On Taukihepa, an island off southern New Zealand, two possible predators exist with sooty shearwaters (*Puffinus griseus*): the weka (*Gallirallus australis*), a large rail, and the ship rat (*Rattus rattus*), both introduced to the island. It was expected that chick predation would be principally by weka, the much larger of the two predators. To measure losses of sooty shearwater chicks to weka or rats, nests were monitored with burrow-scopes at six sites in the summers of 2003-04 and 2004-05. In three of the sites rats were removed on 4-ha grids by trapping. In the other three sites rats were not trapped. In addition, weka were removed from all six sites in 2005. Concurrent diet analysis of weka and rat stomachs was undertaken as well as stable isotopic analysis ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$) of samples from rats and weka. These were compared with possible prey items including sooty shearwaters. Additional stable isotope samples were taken from Pacific rats (*Rattus exulans*), a small rat species present with weka and sooty shearwaters on nearby Moginui Island. Weka diet comprised ~ 40% of bird remains by volume and calculations using Isosource, an isotopic source partitioning model, estimated sooty shearwaters contributed 59% (range: 15-71%) of weka diet during the sooty shearwater chick-raising period. Ship rats, in contrast, had very depleted $\delta^{13}\text{C}$ isotope signatures compared with sooty shearwaters and bird remains contributed < 9% of diet by volume, with Isosource calculations suggesting that ship rats consumed more passerine birds (mean: 30%; range 5-51%) than sooty shearwaters (mean 24%; range: 0-44%). In both summers, more chicks were lost on sites from which rats had been removed than on control sites. When weka were removed in 2005, fewer chicks were lost than in 2004 and significantly fewer weka-killed chicks were found on weka-removal sites than on non-removal sites. Weka were the principal predator of sooty shearwater chicks, depredating an estimated 9.9% of nests. Combining several techniques quantified the loss and identified the principal predator of a seabird in decline.

Ushakova, M.V. **The rhinoceros auklet (*Cerorhinca monocerata*, Alcidae) colonies and number on the southern Kuril Islands.** *Zoologicheskyy Zhurnal* 86(8): 955-965, 2007.

Notes: Twenty-five colonies (about 375 thousand pairs) of the rhinoceros auklet, *Cerorhinca monocerata*, were recorded on the southern Kuril Islands that is much higher than the values previously published (10-18 thousand individuals). Such a difference is explained by the different methods used for the counting of the birds. The author observed the rhinoceros auklet from land unlike those previously who observed them from vessels. The Kuril Islands is a marginal area in the rhinoceros auklet range. Nevertheless, they are characterized by high numbers and population density. The only limiting factor appears to be a lack of areas suitable for nesting. The relationships between the number of rhinoceros auklet colonies and type of vegetation and thickness of the soils were found. The indicators of the bird colonies on small islands were all the plant communities (*Poa annua*, *Angelica gmelim*, *Heracleum lanatum*) that do not form dense sod. *Leymus mollis* usually forms hummocks, and everywhere, is an indicator of the seabird colonies. The density of nesting holes was also related to the type of vegetation and amounted to 0.1-1.93 per m.

Banks, P.B. and Bryant, J.V. **Four-legged friend or foe? Dog walking displaces native birds from natural areas.** *Biology Letters* 3(6): 611-613, 2007.

Notes: Dog walking is among the world's most popular recreational activities, attracting millions of people to natural areas each year with diverse benefits to human and canine health. But conservation managers often ban dog walking from natural areas fearing that wildlife will see dogs as potential predators and abandon their natural habitats, resulting in outcry at the restricted access to public land. Arguments are passionate on both sides and debate has remained subjective and unresolved because experimental evidence of the ecological impacts of dog walking has been lacking. Here we show that dog walking in woodland leads to a 35% reduction in bird diversity and 41% reduction in abundance, both in areas where dog walking is common and where dogs are prohibited. These results argue against access by dog walkers to sensitive conservation areas.

Miles, A.K., Flint, P.L., Trust, K.A., Ricca, M.A., Spring, S.E., Arrieta, D.E., Hollmen, T., and Wilson, B.W. **Polycyclic aromatic hydrocarbon exposure in Steller's eiders (*Polysticta stelleri*) and harlequin ducks (*Histrionicus histrionicus*) in the eastern Aleutian Islands, Alaska, USA.** *Environmental Toxicology and Chemistry* 26(12): 2694-2703, 2007.

Notes: Seaducks may be affected by harmful levels of polycyclic aromatic hydrocarbons (PAHs) at seaports near the Arctic. As an indicator of exposure to PAHs, we measured hepatic enzyme 7-ethoxyresorufin-O-deethylase activity (EROD) to determine cytochrome P4501A induction in Steller's eiders (*Polysticta stelleri*) and Harlequin ducks (*Histrionicus histrionicus*) from Unalaska, Popof, and Unga Islands (AK, USA) in 2002 and 2003. We measured PAHs and organic contaminants in seaduck prey samples and polychlorinated biphenyl congeners in seaduck blood plasma to determine any relationship to EROD. Using Akaike's information criterion, species and site differences best explained EROD patterns: Activity was higher in Harlequin ducks than in Steller's eiders and higher at industrial than at nonindustrial sites. Site-specific concentrations of PAHs in blue mussels (*[Mytilus trossilus]* seaduck prey; PAH concentrations higher at Dutch Harbor, Unalaska, than at other sites) also was important in defining EROD patterns. Organochlorine compounds rarely were detected in prey samples. No relationship was found between polychlorinated biphenyl congeners in avian blood and EROD, which further supported inferences derived from Akaike's information criterion. Congeners were highest in seaducks from a nonindustrial or reference site, contrary to PAH patterns. To assist in interpreting the field study, 15 captive Steller's eiders were dosed with a PAH known to induce cytochrome P4501A. Dosed, captive Steller's eiders had definitive induction, but results indicated that wild Steller's eiders were exposed to PAHs or other inducing compounds at levels greater than those used in laboratory studies. Concentrations of PAHs in blue mussels at or near Dutch Harbor (~ 1,180-5,980 ng/g) approached those found at highly contaminated sites (~ 4,100-7,500 ng/g).

Corsolini, S., Borghesi, N., Schiamone, A., and Focardi, S. **Polybrominated diphenyl ethers, polychlorinated dibenzodioxins, -furans, and -biphenyls in three species of Antarctic penguins.** *Environmental Science and Pollution Research* 14(6): 421-429, 2007.

Notes: *Background, Aims and Scope.* Fish-eating seabirds are recognized to be at risk of accumulating toxic contaminants due to their high position in the trophic web and to their low ability to metabolize xenobiotic compounds. Penguins are widely distributed in Antarctica and represent an important fraction of the Antarctic biomass. They feed mainly on krill and, depending on krill availability, also on fish. It has been reported that predators may be a sink for volatile and toxic chemicals and this may pose a serious environmental problem. Polybrominated diphenyl ethers (PBDEs), polychlorinated dibenzodioxins (PCDDs), -furans (PCDFs), and -biphenyls (PCBs), including non-ortho congeners, hexachlorobenzene (HCB) and p,p'-DDE, were quantified in three species of Antarctic Pygoscelids in order to evaluate their accumulation patterns. The potential toxicity of twenty-two dioxin-like congeners was assessed and expressed as 2,3,7,8-tetra CDD equivalents (TEQs). Differences between males and females were investigated. *Methods.* Blood samples of the Adelie penguin *Pygoscelis adeliae*, Chinstrap penguin *Pygoscelis antarctica* and Gentoo penguin *Pygoscelis papua* were collected at Admiralty Bay, King George Is (62°10'39" S, 58°26'46" W) in February 2004. Halogenated hydrocarbons were identified and quantified using gas chromatography coupled with gas chromatography mass spectrometry analyses. Results are expressed on a wet weight basis. *Results and Discussion.* HCB, p,p'-DDE and SPCBs were higher in Adelie penguins (6.7 ± 6.1, 8.2 ± 3.3 and 9.8 ± 3.8 ng/g, respectively) than in Chinstrap and Gentoo penguins, both of which showed values in the same order of magnitude, but approximately 40% lower than Adelie penguins. Hexa-CBs ranged 35-45% of the residue. Low-chlorinated PCBs (nos.

70+76+95+56+60+101) accounted for 40-60% in the three species. PCB101 made up 15% of the residue in Adelie penguins. PBDEs were 291 ± 477 , 107 ± 104 and 116 ± 108 pg/g in Adelie, Chinstrap and Gentoo penguins, respectively; the most abundant congeners were BDE47 in Adelie and Chinstrap penguins and BDE17 in Gentoo penguins. PCDDs were 22 ± 32 , 6.5 ± 7.4 and 18 ± 23 pg/g in Adelie, Chinstrap and Gentoo penguins, respectively. PCDFs were higher in Addie penguins and lower in Chinstrap penguins. PCDDs/Fs and PBDEs were higher in males than in females of Gentoo and Chinstrap penguins; differences in concentrations were likely related to the partial detoxification that occurs in females during egg formation. Of the four non-ortho PCBs measured, PCB126 occurred at the highest concentrations and contributed the majority of the non-ortho PCB-TEQ in Gentoo and Chinstrap penguins. The highest TEQs were found in the Gentoo penguin and due mainly to PCDDs and non-ortho PCBs. *Conclusions.* POP concentrations in penguins were lower than those found in seabird species from other areas of the world. Different chemical accumulation patterns were observed in relation to species and sex; the Adelie penguin showed the highest POP levels. Dissimilar ecological or metabolic features may be involved; the diverse timing of reproduction steps can be responsible for those differences; moreover, Adelie penguins feed on krill (a fatty resource) more abundantly than the other two species during the rearing period. *Recommendation and Outlook.* The South Shetland Islands might be subjected to a higher chemical impact with respect to the rest of Antarctica, due to their being near South America. Because penguins are fish-eating birds showing low detoxifying capacities and key species in Antarctic ecosystems, further studies on their xenobiotic metabolism should be carried out.

Malt, J. and Lank, D. **Temporal dynamics of edge effects on nest predation risk for the marbled murrelet.** *Biological Conservation* 140(1-2): 160-173, 2007.

Notes: Habitat fragmentation can cause population declines greater than those expected from habitat loss alone. This can result from detrimental "edge effects", which occur when predation rates are higher at habitat edges relative to interiors. The marbled murrelet (*Brachyramphus marmoratus*) is a threatened seabird which nests in old-growth forests, a habitat that is being fragmented by ongoing harvest. There is little consensus on the magnitude of edge effects on marbled murrelets, or how they might vary by edge-type. We compared the fates of experimental murrelet nests at paired edge and interior locations at 52 sites in two regions of south-western British Columbia, Canada. Sites were chosen at "hard" edges (recent clearcuts), "soft" edges (regenerating forest), and natural edges (i.e., riparian areas). We used nest cameras to distinguish disturbances caused by known predators of real nests. Accounting for landscape-scale fragmentation, disturbances by avian predators were significantly more frequent at hard edges relative to interiors, but less frequent at soft edges. There were no edge effects at natural-edged sites. These results imply that detrimental edge effects adjacent to recent clearcuts may decline with time due to successional processes. Survey data suggest that this pattern was caused by Steller's jays (*Cyanocitta stelleri*), who were observed more often at hard edges than soft edges in one region. Where corvids are important predators, we recommend that managers maintain reserves that lessen the amount of hard edge per patch area. Harvest adjacent to reserves should proceed in stages to limit hard edge effects at any given time.

Degraer, S., Meire, P., and Vincx, M. **Spatial distribution, population dynamics and productivity of *Spisula subtruncata*: implications for *Spisula* fisheries in seaduck wintering areas.** *Marine Biology* 152(4): 863-875, 2007.

Notes: Bivalves are important in shallow marine habitats, not at least being the major food resource for seaducks such as the common scoter (*Melanitta nigra*), thousands of which are wintering on the Western Coastal Banks, near the Belgian-French border (North Sea). Next to this ecological importance, fishable stocks of one of these bivalves, *Spisula subtruncata*, occur in the area. This study aimed at investigating *S. subtruncata*'s spatial distribution, population dynamics and productivity and its implications for a sustainable *Spisula* fishery in seaduck wintering areas. The spatial distribution of *S. subtruncata* was studied in 1994 and 1997 in two areas of the Belgian Western Coastal Banks. The population dynamics and production were investigated by monthly sampling of two stations between April 1995 and April 1996 and a seasonal sampling between April 1996 and April 1998. *Spisula subtruncata* had a patchy distribution in the deeper (6 m), fine sandy (200 ± 20 μ m) sediments of the *Abra alba* community, mainly found in the western most part of the Western Coastal Banks. In August 1995, an overwhelming and successful recruitment was observed in this area: local densities were as high as 150,000 ind m⁻². Minor, non-successful recruitments were detected in August 1996 and 1997. Due to space limitation, high densities of *S. subtruncata* are hypothesized to be responsible for the occurrence of aberrant shapes as observed from August 1996 onwards. Growth was described by a seasonally oscillating version of the von Bertalanffy growth function (VBGF): a growth stop was observed from late autumn till early spring. The VBGF parameters K (growth constant) and L-infinity (asymptotic length) were estimated at 0.7-0.9 and 31-33 mm. A combination of length and individual biomass increment showed: (1) a faster length increment of smaller

individuals during the second growing period (catching-up phenomenon), (2) a constant length combined with a decreasing individual biomass during the suboptimal winter periods (except for the first winter, when the individual biomass slightly increased), (3) a positive relationship between the individual biomass decrease and the seawater temperature during the winter periods, and (4) a strong increase of the individual biomass in early spring (April 1997 and 1998) because of gametogenesis, followed by a decrease because of spawning (August 1997). The extremely high total production of the 1995 year class in the tidal gully (Potje) during the study period was estimated at approximately 1,500 g ash-free dry weight (ADW) m⁻² or 600 g ADW m⁻² on average per year. Shellfisheries for *S. subtruncata* within seaduck wintering areas, such as the Western Coastal Banks, should be carefully deliberated since (1) an important food resource for the seaducks will decrease, (2) the ecologically most diverse and rich macrobenthic *A. alba* community will be heavily affected, and (3) the recovery of *Spisula* populations after depletion is expected to be erratic.

Le Bohec, C., Durant, J.M., Gauthier-Clerc, M., Stenseth, N.C., Park, Y.-H., Pradel, R., Grémillet, D., Gendner, J.-P., and Le Maho, Y. **King penguin population threatened by Southern Ocean warming.** *Proceedings of the National Academy of Sciences [USA]* 105(7): 2493-2497, 2008.

Notes: Seabirds are sensitive indicators of changes in marine ecosystems and might integrate and/or amplify the effects of climate forcing on lower levels in food chains. Current knowledge on the impact of climate changes on penguins is primarily based on Antarctic birds identified by using flipper bands. Although flipper bands have helped to answer many questions about penguin biology, they were shown in some penguin species to have a detrimental effect. Here, we present for a Subantarctic species, king penguin (*Aptenodytes patagonicus*), reliable results on the effect of climate on survival and breeding based on unbanded birds but instead marked by subcutaneous electronic tags. We show that warm events negatively affect both breeding success and adult survival of this seabird. However, the observed effect is complex because it affects penguins at several spatio/temporal levels. Breeding reveals an immediate response to forcing during warm phases of El Niño Southern Oscillation affecting food availability close to the colony. Conversely, adult survival decreases with a remote sea-surface temperature forcing (i.e., a 2-year lag warming taking place at the northern boundary of pack ice, their winter foraging place). We suggest that this time lag may be explained by the delay between the recruitment and abundance of their prey, adjusted to the particular 1-year breeding cycle of the king penguin. The derived population dynamic model suggests a 9% decline in adult survival for a 0.26°C warming. Our findings suggest that king penguin populations are at heavy extinction risk under the current global warming predictions.

Burger, J., Gochfeld, M., Sullivan, K., and Irons, D. **Mercury, arsenic, cadmium, chromium lead, and selenium in feathers of pigeon guillemots (*Cepphus columba*) from Prince William Sound and the Aleutian Islands of Alaska.** *The Science of the Total Environment* 387(1-3): 175-184, 2007.

Notes: Arsenic, cadmium, chromium, lead, manganese, mercury and selenium were analyzed in the feathers of pigeon guillemots (*Cepphus columba*) from breeding colonies in Prince William Sound and in the Aleutian Islands (Amchitka, Kiska) to test the null hypothesis that there were no differences in metal levels as a function of location, gender, or whether the birds were from oiled or unoiled areas in Prince William Sound. Birds from locations with oil from the Exxon Valdez Oil Spill in the environment had higher levels of cadmium and lead than those from unoiled places in Prince William Sound, but otherwise there were no differences in metal levels in feathers. The feathers of pigeon guillemots from Prince William Sound had significantly higher levels of cadmium and manganese, but significantly lower levels of mercury than those from Amchitka or Kiska in the Aleutians. Amchitka had the lowest levels of chromium, and Kiska had the highest levels of selenium. There were few gender-related differences, although females had higher levels of mercury and selenium in their feathers than did males. The levels of most metals are below the known effects levels, except for mercury and selenium, which are high enough to potentially pose a risk to pigeon guillemots and to their predators.

Mason, J.W., McChesney, G.J., McIver, W.R., Carter, H.R., Takekawa, J.Y., Golightly, R.T., Ackerman, J.T., Orthmeyer, D.L., Perry, W.M., Yee, J.L., Pierson, M.O., and McCrary, M.D. **At-sea distribution and abundance of seabirds off Southern California: A 20-year comparison.** *Studies in Avian Biology* 33: 1-101, 2007.

Notes: We conducted aerial at-sea and coastal surveys to examine the distribution and abundance of seabirds off southern California, from Cambria, California, to the Mexican border. From May 1999-January 2002, we flew 102 d, covered >54,640 km of transect lines, and conducted nine complete surveys of southern California in January, May, and September. We identified 54 species comprising 12 families and counted >135,000 individuals. Seabird densities were greater along island and mainland coastlines than at sea and were usually greatest in January surveys. Densities were greatest at sea near the northern Channel Islands in January and north of Point Conception in May, and lowest in the southwestern portion of the Southern California Bight in all survey months. On coastal transects, seabird densities were greatest along central and southern portions of the mainland coastline from Point Arguello to Mexico. We estimated that $981,000 \pm 144,000$ (\pm SE) seabirds occurred in the study area in January, $862,000 \pm 95,000$ in May, and $762,000 \pm 72,000$ in September. California Gulls (*Larus californicus*), Western Grebes (*Aechmophorus occidentalis*), and Cassin's Auklets (*Ptychoramphus aleuticus*) were most abundant in January surveys at sea, whereas Sooty and Short-tailed shearwaters (*Puffinus griseus* and *P. tenuirostris*), phalaropes (*Phalaropus* spp.), and Western Gulls (*Larus occidentalis*) were most abundant in May and September surveys. On coastal transects, California Gulls, Western Grebes, Western Gulls, and Surf Scoters (*Melanitta perspicillata*) were most abundant in January; Western Grebes, Western Gulls, Surf Scoters, and Brown Pelicans (*Pelecanus occidentalis*) were most abundant in May; and Sooty Shearwaters, Short-tailed Shearwaters, Western Gulls, Western Grebes, Brown Pelicans, and Heermann's Gulls (*Larus heermanni*) were most abundant in September. Compared to historical seabird densities collected in the same area two decades ago (1975-1978 and 1980-1983), abundance was lower by 14% in January, 57% in May, and 42% in September. Common Murres (*Uria aalge*, =75% in each season), Sooty Shearwaters (55% in May, 27% in September), and Bonaparte's Gulls (*L. philadelphia*, =95% in each season) had lower densities. Conversely, Brown Pelicans (167% overall), Xantus's Murrelets (*Synthliboramphus hypoleucus*; 125% overall), Cassin's Auklets (100% overall), Ashy Storm-Petrels (*Oceanodroma homochroa*, 450% overall) and Western Gulls (55% in May), and Brandt's Cormorants (*Phalacrocorax penicillatus*, 450% in September) had greater densities. Our results indicate that seabird abundance has declined off the southern California coast in the past two decades, and these declines may be warning signs of environmental degradation in the region or effects of larger forces such as climate change.

Xavier, J.C., Wood, A.G., Rodhouse, P.G., and Croxall, J.P. **Interannual variations in cephalopod consumption by albatrosses at South Georgia: implications for future commercial exploitation of cephalopods.** *Marine and Freshwater Research* 58(12): 1136-1143, 2007.

Notes: Assessing the consumption of prey by predators in the marine environment is key to fisheries assessment and management. Although environmental and ecological variations can affect the consumption of certain prey by albatrosses interannually, this issue has not been addressed to date. In the present study, the interannual consumption of cephalopods by grey-headed and black-browed albatrosses was assessed while breeding at South Georgia between 1996 and 2000, by comparing consumption estimates from a reparameterised version of the South Georgia Seabird Impact Assessment (SGSIA) model. The reparameterised model showed that there are considerable interannual variations in cephalopod consumption in both albatross species, with the highest consumption occurring in 1996 (5787 tonnes; for black-browed albatrosses) and 1997 (11 627 tonnes; for grey-headed albatrosses), and the lowest in 2000 (2309 tonnes and 772 tonnes for grey-headed and black-browed albatrosses respectively). These interannual variations were linked to oceanographic conditions and changes in cephalopod abundance/availability to predators. The cephalopod species with the most commercial potential (*Martialia hyadesi*, *Kondakovia longimana*, *Moroteuthis knipovitchi* and *Gonatus antarcticus*) also showed considerable differences in their consumption by predators. Owing to the importance of these squid species in the diet of albatrosses, precautionary measures for future commercial exploitation are suggested.

Kissling, M.L., Reid, M., Lukacs, P.M., Gende, S.M., and Lewis, S.B. **Understanding abundance patterns of a declining seabird: Implications for monitoring.** *Ecological Applications* 17(8): 2164-2174, 2007.

Notes: The Kittlitz's Murrelet (*Brachyramphus brevirostris*) is a rare, non-colonial seabird often associated with tidewater glaciers and a recent candidate for listing under the Endangered Species Act. We estimated abundance of Kittlitz's Murrelets across space and time from at-sea surveys along the coast of Alaska (USA) and then used these data to develop spatial models to describe abundance patterns and identify environmental factors affecting abundance. Over a five-week period in the summer of 2005, we recorded 794 Kittlitz's Murrelets, 16 Marbled Murrelets (*B. marmoratus*), and 70 unidentified murrelets. The overall population estimate (N, mean \pm SE) during the peak period (3-9 July) was 1317 ± 294 birds, decreasing to 68 ± 37 by the last survey period (31 July-6 August). Density of Kittlitz's Murrelets was highest in pelagic waters of Taan Fjord (18.6 ± 7.8 birds/km², mean \pm SE) during 10-16 July. Spatial models identified consistent "hotspots" of Kittlitz's Murrelets, including several

small areas where high densities of murrelets were found throughout the survey period. Of the explanatory variables that we evaluated, tidal current strength influenced murrelet abundance most consistently, with higher abundance associated with strong tidal currents. Simulations based on the empirically derived estimates of variation demonstrated that spatial variation strongly influenced power to detect trend, although power changed little across the threefold difference in the coefficient of variation on detection probability. We include recommendations for monitoring Kittlitz's Murrelets (or other marine species) when there is a high degree of uncertainty about factors affecting abundance, especially spatial variability.

Duhem, C., Roche, P., Vidal, E., and Tatoni, T. **Effects of anthropogenic food resources on yellow-legged gull colony size on Mediterranean islands.** *Population Ecology* 50(1): 91-100, 2008.

Notes: Yellow-legged gull *Larus michabellis* populations have been studied on three archipelagos consisting of 20 islands distributed along 80 km of the French Mediterranean coastline. Population changes were analyzed between 1920 and 2006. In the first decades following their settlement on these islands, the yellow-legged gull populations showed a continuous exponential growth in the three archipelagos, in agreement with an annual geometric growth rate λ above 1. The population growth ceased to fit this model during the 1980s for the older colonies (Riou and Hyeres Islands archipelagos). Thus, we focused on population changes occurring during the period 1982-2000, a pivotal period for which we have both precise census and anthropogenic food resource data, in order to determine environmental factors influencing these population changes using multiple linear regression models. An average annual growth rate of colony size was 1.02 for the last two decades. The changes in landfill availability, the gull density in 1982, and the nesting area in 1982 explained 84.4% of variation in colony size changes between 1982 and 2000. The yellow-legged gull changes on the islands in the last two decades increased as availability in anthropogenic food resources increased near the colony (positive DK). As a consequence, given no reduction in landfill activity or in accessibility for gulls, we expect this region to sustain continuous species expansion in the future.

Robertson, G., Moreno, C.A., Lawton, K., Arata, J., Valencia, J., and Kirkwood, R. **An estimate of the population sizes of Black-browed (*Thalassarche melanophrys*) and Grey-headed (*T. chrysostoma*) Albatrosses breeding in the Diego Ramirez Archipelago, Chile.** *Emu* 107(3): 239-244, 2007.

Notes: The Diego Ramirez Archipelago, Chile, is the southernmost albatross breeding ground in the world and holds globally important numbers of Black-browed (*Thalassarche naelanocephala*) and Grey-headed (*T. chrysostoma*) Albatrosses. A census in the Diego Ramirez Archipelago has been attempted only once, in 1980-81, with methods that were unlikely to determine population sizes accurately. The number of breeding pairs of both species was estimated in the incubation period of 2002 using a combination of aerial photography, ground-based photography, yacht-based photography and ground counts. All islands in the archipelago were surveyed. There were an estimated 55 000 pairs of Black-browed and 17 000 pairs of Grey-headed Albatrosses breeding at the archipelago. Based on the results of this census, and those for the other four known breeding locations, the populations of both species of albatrosses in Chile are considerably larger than previously reported, comprising ~ 20% of the Black-browed Albatrosses and 23% of Grey-headed Albatrosses in the world, with the largest populations of both species occurring in the Diego Ramirez Archipelago.

Crawford, R.J.M., Dyer, B.M., Kemper, J., Simmons, R.E., and Upfold, L. **Trends in numbers of Cape Cormorants (*Phalacrocorax capensis*) over a 50-year period, 1956-57 to 2006-07.** *Emu* 107(4): 253-261, 2007.

Notes: The population trend of Cape Cormorants (*Phalacrocorax capensis*), a species endemic to southern Africa and that feeds mainly on shoaling pelagic fish, is described for a 50-year period, from 1956-57 to 2006-07. The main breeding localities for the species are grouped in three regions in the Benguela upwelling ecosystem: guano platforms off central Namibia, islands off southern Namibia and islands off South Africa's Western Cape Province. From 1956-57 to 1978-79, the numbers breeding off Namibia increased, as a result of increased availability of breeding space and adequate supplies of food. In the same period, numbers remained stable in the Western Cape. Numbers decreased off southern Namibia in the early 1980s and off central Namibia in the early 1990s, when environmental perturbations reduced the availability of food. Numbers decreased in the Western Cape in the early 1990s, following periods of scarcity of anchovy (*Engraulis encrasicolus*), an important prey item, and an outbreak of avian cholera caused by the bacterium *Pasteurella multocida*. They remained low as cholera outbreaks continued and some pelagic fish were displaced to the east beyond the foraging range of breeding Cormorants. The overall population of

Cape Cormorants was of the order of 100 000 pairs in 1956-57, increased to ~ 250 000 pairs in the 1970s, but reverted to ~ 100 000 pairs in 2005-06.

Bester, A.J., Priddel, D., Klomp, N.I., Carlile, N., and O'Neill, L.E. **Reproductive success of the Providence Petrel *Pterodroma solandri* on Lord Howe Island, Australia.** *Marine Ornithology* 35(1): 21-28, 2007. **O/A**

Notes: The only significant breeding locality of the Providence Petrel *Pterodroma solandri* is Lord Howe Island, Australia, where the population is considered Vulnerable. During the 2000 and 2001 breeding seasons, data were collected on hatching, fledging and breeding success, and on egg and chick mortality. Annual breeding success was 34%-36% in burrows that were visited repeatedly and among adults and chicks handled at least once, and 54% in burrows that were visited only twice and contents not handled. The breeding success of individual adults was positively correlated with body condition, the relationship being stronger for males than for females. Egg losses occurred throughout the incubation period, but chick losses were concentrated within the first four weeks from hatching. Egg and chick mortality were strongly correlated with the distance of the nest from the burrow entrance, with more losses occurring in nests close to the entrance. The main causes of breeding failure were inundation of burrows and predation of eggs and chicks by the endemic Lord Howe Woodhen *Gallirallus sylvestris*. Although breeding success was less than that of some other procellariiforms, we were unable to identify any new conservation measures to enhance reproductive output.

Stevenson, C. and Woehler, E.J. **Population decreases in Little Penguins *Eudyptula minor* in southeastern Tasmania, Australia, over the past 45 years.** *Marine Ornithology* 35(1): 61-66, 2007. **O/A**

Notes: We investigated the distribution and abundance of Little Penguins *Eudyptula minor* at 12 known colony locations on mainland southeastern Tasmania, Australia. Surveys of scientific journals, unpublished field surveys and oral records were compiled to assess the historical distribution (before 1996) of this species within a 150-km radius of Hobart. Current status of each site was assessed by conducting surveys of the areas of historical distribution during the 2002/03 breeding season. Transects were used to conduct burrow counts, supplemented by counts of penguins coming ashore at night. Of the 12 colonies examined, four have disappeared and two have decreased appreciably in size within the last decade. Potential causes of these decreases include predation by introduced vertebrates, habitat modification and destruction and incidental drowning in recreational gillnets.

Robertson, G.J., Russell, J., Bryant, R., Fifield, D.A., and Stenhouse, I.J. **Size and trends of Leach's Storm-Petrel *Oceanodroma leucorhoa* breeding populations in Newfoundland.** *Atlantic Seabirds* 8(1/2): 41-50, 2006. [Published November 2007]

Notes: The world's largest Leach's Storm-Petrel *Oceanodroma leucorhoa* colonies are in Newfoundland, Canada, with Baccalieu Island alone supporting over 3 million nesting pairs. Since 2001, an effort was made to re-census many of the larger colonies in Newfoundland and compare current population estimates with those from the 1970s and early 1980s. Surveys were undertaken by grubbing small plots, calculating occupied burrow densities and extrapolating these densities to the area occupied by petrels. Playback and burrow entrance monitoring proved to be less or equally effective as grubbing, but required much more time, possibly due to the high densities of occupied burrows. The larger colonies examined appeared to be stable between the 1970-80s and the early 2000s while the two smaller colonies examined, Middle Lawn Island and Small Island, showed declines. The establishment of large gull (both Great Black-backed Gull *Larus marinus* and Herring Gull *L. argentatus*) colonies close to these two islands in the 1970s may explain the population declines at these sites, although habitat quality differences among islands could not be ruled out. In contrast, massive predation (an estimated 49,000 adults killed/year) of Storm-Petrels on Great Island, Witless Bay by large gulls did not appear to have reduced the breeding Storm-Petrel population which remains around 270,000 breeding pairs. Although Leach's Storm-Petrel colonies in Newfoundland appear to be faring well in the last 2-3 decades, continued monitoring is warranted, given potential threats from large gull predation, contaminants, chronic oil pollution and offshore oil and gas production.

Yésou, P. **The Balearic Shearwater *Puffinus mauretanicus*: a review of facts and questions.** *Atlantic Seabirds* 8(1/2): 73-80, 2006. [Published November 2007]

Notes: The systematic relationships of *Puffinus mauretanicus*, which breeds in the Balearic Islands in the western Mediterranean, have been disputed since its initial description as a subspecies of the Manx Shearwater *P. puffinus*. It is presently considered a species of its own, slightly differentiated from Yelkouan Shearwater *P. yelkouan*, a 'sibling species' which breeds elsewhere in the Mediterranean. However, birds seemingly intermediate between these two forms are breeding in Menorca, and further research is needed to confirm whether the two taxa really are different species. Bearing its limited breeding range and population size in mind, it is rather odd that the Balearic Shearwater has not been classified as threatened by BirdLife International in its *Threatened Birds of the World, 2000*. Since then, population studies have sounded the alarm, suggesting that the species might disappear within a few decades, and the Balearic Shearwater is now categorized as 'Critically Endangered'. Published population estimates are not always reliable, however, and its population dynamics remains poorly understood. Threats are better known and include mammal predators at breeding sites, mortality induced by long-line fishing, and probably a greater difficulty to access food resources.

Hood, S.L. and Dinsmore, S.J. **Abundance of Snowy and Wilson's Plovers in the lower Laguna Madre region of Texas.** *Journal of Field Ornithology* 78(4): 362-368, 2007.

Notes: Snowy Plovers (*Charadrius alexandrinus*) and Wilson's Plovers (*C. wilsonia*) are shorebird species of increasing conservation concern, with populations apparently declining in North America. However, estimates of current populations are needed before initiating long-term monitoring or planning. In 2004, we estimated abundance of breeding Snowy and Wilson's plovers in the lower Laguna Madre region of Texas using occupancy abundance estimation. We made repeated visits to survey plots from April to June, recording the number of adults of both species observed and the amount of suitable breeding habitat within each plot. We considered Bayesian occupancy abundance models with and without habitat covariates to explain the abundance of both species. For both Snowy and Wilson's plovers, the number of birds counted in each plot was influenced by the amount of suitable breeding habitat within the plot (Snowy Plover $a_{\text{habitat}} = 0.52$, SD = 0.10, 95% CI = 0.33-0.71; Wilson's Plover $a_{\text{habitat}} = 0.48$, SD = 0.12, 95% CI = 0.24-0.71). Using the habitat covariate models for each species, we estimated that 416 adult Snowy Plovers (95% CI = 394-438) and 279 adult Wilson's Plovers (95% CI = 262-296) were present in our study area. Our results illustrate the use of a relatively new method for abundance estimation, and indicate that the lower Laguna Madre region of Texas is an important breeding area for both Snowy and Wilson's plovers. Given the documented and suspected population declines for Snowy and Wilson's plovers, we recommend protection of their breeding habitats along the coast of Texas from development and degradation resulting from unregulated use.

Patten, K. and O'Casey, C. **Use of Willapa Bay, Washington, by shorebirds and waterfowl after *Spartina* control efforts.** *Journal of Field Ornithology* 78(4): 395-400, 2007.

Notes: Over the past 15 yr, an invasive cordgrass, *Spartina alterniflora*, has covered more than 5000 ha of tidal mudflats in Willapa Bay, Washington, threatening key shorebird habitat on the Pacific Flyway. Although chemical and mechanical control methods have been used to manage *Spartina* in Willapa Bay, little is known about how these methods affect subsequent use by shorebirds and waterfowl. During 2003-2004, four sites were monitored for 10-min periods for use by shorebirds [Dunlin (*Calidris alpina*), Western Sandpiper (*C. mauri*), Least Sandpiper (*C. minutilla*), Black-bellied Plovers (*Pluvialis squatarola*) and Long-billed and Short-billed dowitchers (*Limnodromus* sp.)] and waterfowl [Mallard (*Anas platyrhynchos*), Gadwall (*A. strepera*), American Wigeon (*A. americana*), Green-winged Teal (*A. crecca*), and Canada Goose (*Branta canadensis*)]. The four sites were bare mudflat (never infested with *Spartina*), tilled *Spartina* meadow (free of live *Spartina* and dead stubble), herbicide-sprayed *Spartina* meadow (10% living *Spartina* and 30% dead stubble), and an untreated *Spartina* meadow. Untreated *Spartina* meadow was rarely used by birds, with a mean of seven small *Calidris* sandpipers (peeps) and 0.8 waterfowl ha⁻¹. Mean numbers of peeps and waterfowl observed using the herbicide-treated *Spartina* meadow were 62 and 16 ha⁻¹, and the tilled *Spartina* meadow were 700 and 27 ha⁻¹, respectively. Mean use of the adjacent bare mud site by peeps and waterfowl was 450 and 11 ha⁻¹, respectively. The untreated *Spartina* meadow, sprayed meadow, tilled meadow and the bare mud site had mean densities of Black-bellied Plovers and dowitchers of 26, 24, 6, and 0 ha⁻¹, and 0.8, 6, 0.3, and 0 ha⁻¹, respectively. Our results demonstrate that, within several years of removal of invasive *Spartina* from mudflats in a large Washington estuary by either mechanical or chemical means, use by shorebirds and waterfowl will increase dramatically.

Yasue, M., Patterson, A., and Dearden, P. **Are saltflats suitable supplementary nesting habitats for Malaysian Plovers *Charadrius peronii* threatened by beach habitat loss in Thailand?** *Bird Conservation International* 17(3): 211-223, 2007.

Notes: Resort development and coastal beach erosion have led to declines in beach breeding habitat for the near-threatened Malaysian Plover (*Charadrius peronii*) in the Gulf of Thailand. Semi-natural saltflats may provide supplementary nesting areas. We compared the environmental conditions, incubation behaviour and nesting success of plovers breeding on sandy beaches and saltflats in Thailand. In total we monitored 21 and nine nesting attempts in 2004 (beaches and saltflats, respectively) and 26 and 22 nesting attempts in 2005. Despite higher air temperatures in the saltflats ($P < 0.0001$), we detected no significant differences in nest attendance ($P = 0.542$ and $P = 0.885$ for 2004 and 2005, respectively), number of incubator changes between parents ($P = 0.776$ and $P = 0.823$) or number of parental nest departures ($P = 0.087$ and $P = 0.712$) during 120 incubation observations on 55 nests. There was also no difference in hatching success between beaches in 2004 (beach = 0.65, saltflat = 0.55; $P = 0.692$, $n = 26$) and 2005 (beach = 0.46, saltflat = 0.35; $P = 0.539$, $n = 41$). These results suggest that saltflats may provide nesting habitat for Malaysian Plovers and could help enhance overall hatching success rates by reducing nesting densities on beaches. Although there are few remaining intact saltflats in coastal Thailand, there are currently vast areas of abandoned tiger prawn aquaculture ponds that could be rehabilitated into saltflats at relatively low cost. Given the large area of disused aquaculture ponds throughout Thailand and South-East Asia and the substantial human pressure on coastal habitats, there could be considerable conservation benefits to the restoration of aquaculture ponds.

Simmons, R., Baker, N., Braby, R., Dodman, T., Nasirwa, O., Tyler, S., Versfeld, W., Wearne, K., and Wheeler, M. **The Chestnut-banded Plover is an overlooked globally Near Threatened Species.** *Bird Conservation International* 17(3): 283-293, 2007.

Notes: Species that show obvious population declines are relatively easy to categorize as globally threatened under IUCN Red List criteria. However, species whose populations are highly concentrated at a few inaccessible sites that are unprotected or habitat-threatened and then disperse are more difficult to pigeon-hole. Here we re-assess the conservation status of one such species - the Chestnut-banded Plover *Charadrius pallidus* - that occurs across Africa in specialized, inaccessible and arid habitat. Wetland bird counts from 1991 to the present allow us to determine a new world population estimate of about 17,830 birds. This allows us to determine a new 1% level and we identified only eight sites in southern and East Africa where these plovers congregate in numbers $>1\%$ when non-breeding. There are only five other sites that hold more than 100 birds, indicating that the species is not simply widely dispersed across suitable habitats. Simultaneous counts across southern and East Africa indicate that just three sites - Walvis Bay and Sandwich Harbour in Namibia and Lake Natron in Tanzania - can hold 87% of the world population during non-breeding periods. Since two of these sites are under threat from pollution, siltation and water abstraction, and the eight sites in total comprise just 30% of the area criteria set by IUCN, the bird meets one of the two qualifiers for globally Vulnerable status. Despite this, we cannot detect any long-term declines in population size, partly because of wide variations in population numbers over decadal time periods (itself an IUCN qualifier). It is clear that this bird should move from its present Least Concern status to Near Threatened and conservation measures be enacted at two of the top three sites - Walvis Bay and Lake Natron.