

PACIFIC SEABIRDS



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PACIFIC SEABIRD GROUP

Dedicated to the Study and Conservation of Pacific Seabirds
and Their Environment

The Pacific Seabird Group (PSG) was formed in 1972 due to the need for better communication among Pacific seabird researchers. PSG provides a forum for the research activities of its members, promotes the conservation of seabirds, and informs members and the public of issues relating to Pacific Ocean seabirds and their environment. PSG holds annual meetings at which scientific papers and symposia are presented. The group's publications include *Pacific Seabirds* (formerly the PSG Bulletin), *Marine Ornithology* (published jointly with the African Seabird Group and the Australasian Seabird Group), symposium volumes, and technical reports. Conservation concerns include seabird/fisheries interactions, monitoring of seabird populations, seabird restoration following oil spills, establishment of seabird sanctuaries, and endangered species. Policy statements are issued on conservation issues of critical importance. PSG members include scientists, conservation professionals, and members of the public from both sides of the Pacific Ocean. It is hoped that seabird enthusiasts in other parts of the world also will join and participate in PSG. PSG is a member of the International Union for Conservation of Nature (IUCN), the Ornithological Council, and the American Bird Conservancy. Annual dues for membership are \$25 (individual and family); \$15 (student, undergraduate and graduate); and \$750 (Life Membership, payable in five \$150 installments). Dues are payable to the Treasurer; see Membership/Order Form next to inside back cover for details and application.

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Pacific Seabirds

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REPORTS

Reports provide information on current projects. The information is preliminary and has not been peer-reviewed; therefore it should not be cited without permission from the authors.

SHELIKAN ISLAND, SEA OF OKHOTSK: THE MORE GULLS, THE LESS VASCULAR PLANT DIVERSITY

L.A. Zelenskaya and M.G. Khoreva

Shelikan Island (59° 35' N, 149° 09' E) is located about 4.5 km from the mouth of the Tauy river and approximately 1.8 km from the nearest coast. The island consists of a rocky mountain of quartz diorites, 71.2 m high; the area is about 9 ha. The colony of Slaty-backed Gulls (*Larus schistisagus* Stejneger) on Shelikan Island is the largest in the Sea of Okhotsk and one of the largest in the world (approximately 6000 pairs in 2003). Larger colonies are known on Signalniy Island near east coast of Kamchatka, Bering Sea (20,000 pairs; Vyatkin 2000), and probably on Daikoku Island in Japan (3500 pairs in 1986; Watanuki 1988).

Comprehensive investigations of the seabird colony on Shelikan Island, and also vegetation and its changes under the influence of birds, were carried out in 1986–1987 (Zelenskaya and Chastukhina 1990, Zelenskaya 1992, Chastukhina 1995). During this research the top of the island was covered with mixed woods of *Betula lanata* and *Larix cajanderii*, with a rich understory of *Pinus pumila*, *Betula middendorffii*, and *Sorbus sambucifolia*. Slopes were well covered by reed bent grass (*Calamagrostis langsdorffii*), with lyme grass (*Leymus mollis*) on lower parts near the sea. The vegetation of island varied, however, on sites with a high density of birds. The negative influence of gulls on the vegetation was marked, especially on slopes with south and east exposure. Much of the vegetative cover there was destroyed; at the same time we observed a process of its recovery, usually with species from the given or nearest com-

munity, less often due to colonization by weeds (Chastukhina 1995).

During a short visit to Shelikan in July 1997, we found sharp changes in both the numbers of birds and the pattern of vegetative cover. The number of seagulls had increased noticeably, and the woods on the top part of island were strongly degraded as a result of this big aggregation of birds (Zelenskaya 1999). The significant changes that occurred during the 10 years between visits gave rise to a set of questions. In search of answers, we visited the island in 2000, 2002, and 2003 to continue research on feeding, breeding success, and botany.

A considerable increase in the size of Slaty-backed Gull colonies from the end of 1970s through the 1980s was noted by researchers throughout the species' breeding area. Data come from Moneron Island, near Sakhalin (Shibaev and Litvinenko, 1994; Daikoku and Yruri Islands, Japan (Watanuki et al. 1988); the majority of colonies on Kamchatka and the Koryak mountains (Vyatkin 2000); and some islands of the Kuril archipelago (Artukhin et al. 2001a). However, this population growth was followed in many colonies by stabilization of bird numbers or even a considerable decrease. Probably Slaty-backed Gulls reacted to warming of the climate and changes in sources of food during the 1970s and 1980s, with a rough growth of numbers that reached a maximum in the early to mid-1990s. It appears that now the increased seagull number has stabilized and is declining, in accordance with the classical rule of population fluctuations connected with a change in the abundance of a forage

(similar to a "predator-prey" system). This hypothesis concerning population change is supported by trends on some islands in the Kuril archipelago. We have counts in the Kurils for 1963, 1995 (carried out by A.M. Truhin), and 2000–2001 on the islands of Bazarniy, Baklanyim Raikoke, and Lovushki. A sharp rise in gull numbers in 1995 is well documented, and populations subsequently decreased to 1963 figures or even lower (Artukhin et al. 2001). The hypothesis explains the low numbers of Slaty-backed Gulls noted in the latest counts on the Kuril Islands (Artukhin et al. 2001a). The decrease was not consistent with the general growth in numbers reported in adjoining regions (Shibaev and Litvinenko 1994, Vyatkin 2000, Watanuki et al. 1988). This discordance is most likely the result of an absence of recent data. Thus counts carried out by the same observers in the extreme south of Kamchatka in 2000 showed approximately half the number of nesting gulls as in the beginning of 1980s (Artukhin et al. 2001b). Based on counts in 1994–1995 on Kamchatka, the number of birds grew considerably (Vyatkin and Vyatkin 2000).

During the period when we monitored the colony of Slaty-backed gulls on Shelikan Island, there were changes in forage resources. In 1980s up to a third of the gulls (based on frequency of occurrence in the diet) were feeding at fur farms in the villages of Arman and Tauysk. Gulls exploited the fur farms by plundering food intended for arctic fox (*Alopex lagopus*). They also ate foxes, both dead animals and sometimes live fox kits. The opportunity to obtain additional

REPORTS – Shelikan Island

food on fur farms was the major factor that favored prosperity of this gull colony (Lupatch 1988). Both fur farms had closed by 1997, but the number of birds was much higher than in 1986-87 (Table 1).

Natural prey of the gulls is obtained in the marine environment. An important factor promoting prosperity of the colony is the broad intertidal zone (up to 5 km in width), where gulls forage at low tide, collecting marine invertebrates and demersal fishes in pools. The island gulls have adapted to prey on salmon approaching rivers to spawn. During ebb tide in 1987, especially during daytime and at low water levels, we observed gulls preying on pink (*Oncorhynchus gorbuscha*) and chum (*O. keta*) salmon en route to spawning grounds in the Tauy river (up to 300 fishes during one ebb tide). There also are big spawning sites of Pacific herring (*Clupea harengus*) near the island in Amakhtonskiy Bay. At low tide, herring roe on seaweed becomes partly accessible to birds and is the major spring food for this population. The herring also are caught by gulls in the spring. At present (data of 2000), since the closing of the fur farms, herring also are the major food source in August. In summer, shoals of Pacific capelin (*Mallotus villosus*) and Pacific sand lance (*Ammodytes hexapterus*) approach the coast and are the basic food for nestlings. There are a lot of berries on the coast, which become important food sources at the end of summer. Crowberry (*Empetrum nigrum*), blueberry (*Vaccinium uliginosum*), and cloudberry (*Rubus chamaemorus*) comprise up to 30% of the gulls' diet in August–September.

There were changes concerning relationship of humans and gulls. In earlier times the frontier outpost at the mouth of the river did not permit private boats to pass through to the sea. Recently, however, egg-gathering by the villages of Balagannoe, Tauysk, and Talon has increased considerably. Within only one day of our stay on the island (31 May 31–1 June 2000), three motorboats landed, bringing 13 persons with buck-

ets for gathering eggs. Egg-laying had just begun, and after the egg-collectors had visited the island, practically no gull eggs remained. As a result of injurious egg gathering, the date of mass fledging has changed. In 1986-87, the first fledglings were reported on 2–4 August, and one week later the mass fledging began. In 2000 only single nestlings were observed, and they were still unable to fly in the last third of August. In mid-August 2000 and 2003, only individual fledglings were noted; mass fledging was expected at the end of August and later. A portion of the gulls nevertheless may breed successfully, because the villagers' attention shifts to fishing when the pink salmon start spawning, so they stop plundering gull nests. At the same time, mass poaching by fishermen (fishing only for the extraction of caviar) probably provides one more food resource for gulls, since the cleaned fish are simply thrown out by the poachers.

The increase in nesting gulls is having a destructive effect on the island's vegetation. Especially amazing is the rate of change not only in vegetation, but also in soil cover. Gull nesting is now expanding to wooded sites on top of the island. At the end of the 1980s only scattered birches with damaged branches were found on the south part of the top, and now this birch wood has practically disappeared. All that remains are isolated dead trunks with broken-off and decayed branches, completely covered with mosses and lichens. In the north part of the island a larch-birch wood with an understory of Siberian dwarf pine (*Pinus pumila*) also has changed considerably. In the 1980s only a few small gull colonies were found there. There are now numerous nests under the bushes, and the pines have turned yellow or dropped their needles and are covered with lichens. Some larches are still alive, although covered with lichens and mosses.

The grassy ground cover on slopes almost is completely destroyed, and in some places the soil has eroded away. At the top of an east-facing slope in the center of island, the understory and grassy ground cover are completely destroyed,

and the ground is coated and impregnated with excrement. Gull nests are now absent on steep, peaty slopes where the soil is slippery. However, where the soil has completely washed away and the rocky substrate is exposed, nests are appearing again. Gull nests are sparse on a west-facing slope in the center of the island, which is still wooded; however, degradation of the plant cover is also visible there.

Shelikan Island gives us a unique opportunity to observe the process of a population increase in gulls and the consequent loss of vascular plant species diversity. Table 1 documents this relationship.

The list of "lost" species includes *Dryopteris expansa*, *Lycopodium annotinum*, *L. dubium*, *Hierochloa alpina*, *Festuca ovina*, *Veratrum oxysepalum*, *Iris setosa*, *Aconogonon tripterocarpum*, *Moehringia lateriflora*, *Rubus arcticus*, and *Rhododendron camtschaticum*. These species grew on the island in 1986 (Chastukhina 1995), but we did not find them subsequently. We did find several new adventitious species, but these were outnumbered by the species that had dropped out. The list for 1986 includes 55 species belonging to 50 genera and 26 families. In 2003, 37 species from 35 genera and 21 families were recorded on the island. Thus 18 species (33 % of the floristic diversity) were lost over 17 years, approximately 1 species per year. The majority of remaining families and genera are represented by one species; however, the families Rosaceae, Asteraceae, and Poaceae contain several species each.

It is known that the floristic richness of a territory depends on ecological factors, such as climate and relief. For islands, remoteness from the nearest continent also is important. In our case, the nesting of colonial birds is another essential influence on the environmental conditions for plants. The impact of birds caused the replacement of primary vegetation with a secondary community, in which bent reed grass dominated. The next stage is that, with increased pressure, the vegetative cover is destroyed.

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It is possible to predict that, at the present rate of expansion of the gull population on Shelikan Island, the primary woodland vegetation will completely disappear, and that a secondary grassy vegetation will be generated with a depauperate flora of vascular plants.

A reduction of species richness of vascular plants in association with strong bird influence has been reported on other islands in the northern Sea of Okhotsk (Yamskii Islands, Talan Island), although the decrease in plants there has not been nearly as catastrophic there as on Shelikan (Khoreva, 2003). On the other hand, the literature does not always indicate that birds cause floristic impoverishment on islands. The role of colonial seabirds in promoting the primary formation of vegetative cover is emphasized by Breslina (1987) on the Kola Subarctic Islands. When new islets were raised tectonically in the White Sea, nesting material brought to colonies by birds introduced the rudiments of plants that colonized the ground. At the same time, on many seaside rocks where gulls were nesting, there was a tendency toward destruction of vegetation. However, depauperization of the flora, as in the northern Okhotsk Sea, was not noted.

On our study sites (Umara and Shelikan Islands), a small number of introduced species were found only in breeding colonies of the Slaty-backed Gull, apparently brought from dumps and fur farms. Other species of colonial birds feeding in the sea and anything new do not introduce a vegetative cover.

At Buldir Island (Aleutian Islands), where the colony of sea birds exceeds 1 million, 119 species of vascular plants were identified, considerably fewer than on a nearby larger island, Amchitka (Byrd 1984). The most amazing feature of Buldir vegetative cover is the wide distribution of grassy communities with *Elymus arenarius* (Russian authors call it *Leymus mollis*), which on Amchitka Island are restricted to a narrow fringe along the coastline, and also the small distribution of crowberry communities (*Empetrum nigrum*), whereas crowberry covers approximately 55 % of Amchitka

Island. Byrd (1984) gives fertilization by bird feces as the reason for the development of a magnificent grassy vegetation (dominated by lyme grass and a few umbellifers) on Buldir. However, he does not stipulate the negative influence of this fertilization on species variety. Byrd accounts for the lower plant species richness on Buldir in comparison with Amchitka Island by Buldir's smaller human impact (thus absence of introduced species), its isolation, small area (approximately 20 km²), and its relatively young geological age.

As for the Northern Okhotsk Islands, the impoverishment of flora in connection with the activity of marine colonial birds is marked on the Commander Islands (Mochalova 2001): only 5 species of vascular plants grow on Aryi Kamen Island and 34 on Toporkov Island. On Iona Island, a small splinter of a land in the middle of the Sea of Okhotsk, only two species occur—*Leymus mollis* and *Angelica gmelinii* (Makhinov 1996). From our point of view, the reduction of species richness of vascular plants on small islands with a high density of nesting birds is the general rule, at least in the North Pacific.

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CASPIAN TERN PREDATION ON SALMON SMOLTS IN THE COLUMBIA RIVER

Dan Roby, Ken Collis, Don Lyons, Kim Nelson, Anne Mary Myers, Karen Fischer, and Garrett Dorsey

Oregon State University and its co-operators continued research on predation by seabirds on salmon smolts in the lower and mid-Columbia River. They also monitored tern colony size and nesting success, as part of efforts to evaluate management of terns in the Columbia River estuary by federal and state agencies.

Seabirds, including Caspian Terns (*Sterna caspia*), Double-crested Cormorants (*Phalacrocorax auritus*), Western and Glaucous-winged Gulls (*Larus occidentalis* and *L. glaucescens*), and American White Pelicans (*Pelecanus erythrorhynchos*), prey on juvenile salmonids in the Columbia River estuary and lower and mid-Columbia River. Some of these fish are listed under the federal Endangered Species Act, and therefore agencies are required to take measures to improve salmonid survival in the river. One focus has been to relocate the principal breeding colony of Caspian Terns in the lower Columbia River, with the aim of reducing predation by terns on salmonids. The tern colony was induced to move from its former site on Rice Island to an artificially-improved site on East Sand Island. The terns have nested successfully at the East Sand site for the past several years.

In 2003, the size of the East Sand Island tern colony in the Columbia River estuary was ca. 8325 pairs, and they produced roughly 8977 fledglings. This corresponds to a nesting success of 1.08 young raised per breeding pair, the same as in 2002. However, the colony was estimated to include about 9900 nesting pairs and produced 11,000 fledglings in 2002, indicating a decrease of about 3000 terns at the East Sand Island colony in

2003. Reasons for this decline are currently unknown, but there is no evidence of emigration to alternative colony sites. About 2.6 ha of nesting habitat was prepared for the terns on East sand Island prior to the 2003 nesting season, and terns utilized 1.8 ha for nesting, the same as in 2002. Juvenile salmonids comprised 24% of the diet of terns at the East Sand Island colony in 2003, the lowest proportion of salmonids recorded so far for Caspian Terns nesting in the lower Columbia River (salmonids were 31% in 2002). Clupeids (Pacific herring *Clupea pallasii* and Pacific sardine *Sardinops sagax*), northern anchovy (*Engraulis mordax*), and surfperch (Embiotocidae) were the most prevalent non-salmonid prey in tern diets.

In the mid-Columbia, the tern colony on Crescent Island was estimated to include 510 nesting pairs in 2003, a significant decline from the ca. 650 nesting pairs that used the island in 2001. This colony is still the second-largest Caspian Tern colony in the Pacific Northwest, after the East Sand Island colony. About 280 fledglings were produced this year, corresponding to a nesting success of 0.55 young raised per nesting pair. Juvenile salmonids comprised 68% of the diet of terns in 2003, similar to diet composition during 2000-2002. Most of the non-salmonids observed being delivered to the Crescent Island colony were cyprinids (i.e., northern pikeminnow, peamouth) and bass. To help determine the foraging patterns of terns nesting on Crescent Island, 12 terns were radio-tagged in mid-May. Six of the 12 radio marked terns successfully fledged young, two attempted to nest on Crescent Island and failed (17%), two lost their transmit-

ters, one relocated to the East Sand Island tern colony 310 miles downstream, and one was never re-sighted.

Participants in the study included Oregon State University, Real Time Research, Columbia River Inter-Tribal Fish Commission, and U.S. Geological Survey. This year's research team included Dan Roby, Ken Collis, Kim Nelson, Don Lyons, Anne Mary Myers, Karen Fischer, Garrett Dorsey, Bobby Begay, Rob Suryan, Al Evans, Mike Hawbecker, and a number of seasonal technicians and volunteers. This study was funded by the Bonneville Power Administration and the Northwest Power and Conservation Council. (OMIT: the interagency Caspian Tern Working Group (CTWG) including the National Marine Fisheries Service, US Army Corps of Engineers, US Fish and Wildlife Service, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife, Idaho Department of Fish and Game, Columbia River Inter-Tribal Fish Commission, and others.) See www.columbiabirdresearch.org for more information.

Editor's note: the saga of the Columbia River terns has been chronicled in this journal for several years: "Conservation News" in *Pacific Seabirds* 25:69, 1998; 26:10, 1999; 26:62, 1999; 27:23, 2000; 27:65, 2000; 28:12, 2001; 28:68, 2001; 29:11-12, 2002; and this issue; and PSG abstracts in *Pacific Seabirds* 27:47, 2000; 28:42, 2001; and 29:36, 51, and 62, 2002.

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CASPIAN TERN NESTING ECOLOGY AND DIET IN SAN FRANCISCO BAY AND INTERIOR OREGON

Dan Roby, Ken Collis, Kim Nelson, Keith Larson, Chris Couch and PJ Klavon

The goal of this study was to develop a better understanding of Caspian Tern colony status and diet composition at representative colonies in coastal and interior habitats of northern California and interior Oregon. Information from this study will be used in the development of a Caspian Tern Management Plan and Environmental Impact Statement by the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and NOAA Fisheries. The Caspian Tern Management Plan and EIS are mandated by a court-mediated settlement agreement with the goal of reducing predation on salmonids by Caspian Terns nesting on East Sand Island.

There were five known breeding colonies of Caspian Terns in the San Francisco Bay area in 2003 (Brooks Island, Knight Island, Baumberg Pond, A-7 Pond, and Agua Vista Park), where a total of approximately 1190 breeding pairs nested. Most breeding pairs nested on the Brooks Island colony (72%). Marine forage fishes, in particular anchovies (*Engraulis mordax*), surfperch (Embiotocidae), herring (*Clupea pallasii*), and silversides (Antherinidae), were the predominant component of the tern diets at all five colonies. Juvenile salmonids were identified in the diet at four of the five colonies, but they comprised less than 10% of the diet at Knight

Island, less than 2% at the Brooks Island colony, and less than 1% of the diet at the other three colonies. Nesting success at each colony ranged from 0.08–0.70 young fledged per breeding pair, which was fair to poor compared to other tern colonies on the west coast. All five colonies appeared to be limited by the availability of suitable nesting habitat and/or quality of nesting substrate. Factors limiting nesting success included mammalian nest predators, displacement by other colonial nesting waterbirds, and human disturbance.

We studied two colonies in interior Oregon, one at Summer Lake Wildlife Area and the other at Crump Lake in the Warner Valley. Both sites have a recent history of Caspian Tern nesting activity, but neither site has supported successful nesting in the last two years, primarily because of fluctuating water levels that either flooded nesting habitat or connected nesting islands to the mainland, which allowed access by mammalian nest predators. To evaluate factors that limit nesting success at the two sites, we built an elevated nesting platform on Keister Island in Crump Lake (where the former colony site was flooded) and attempted to attract terns to nest on a small island in an impoundment in Summer Lake Wildlife Area (where the former colony site was connected to the main-

land). Caspian Terns nested successfully at both managed sites but not at other sites in the study areas, suggesting that suitable nesting sites for terns was limited. The diet of terns at these sites consisted primarily of Tui chubs (*Siphateles bicolor*) and unlisted species; no anadromous fish were detected in the diets at either site. One Warner sucker (*Catostomus warnerensis*), a federally-listed threatened species, was identified in the diet at Crump Lake, but this species comprised less than 0.1% of the tern diet. Nesting success at the two sites was only fair and was limited by the availability of suitable nesting habitat at Crump Lake and the quality of nesting substrate at Summer Lake Wildlife Area.

Participants in the study included Oregon State University, Real Time Research, and U.S. Geological Survey. This year's research team included Dan Roby, Ken Collis, Kim Nelson, Keith Larson, Chris Couch, PJ Klavon, Don Lyons, Rob Suryan, Anne Mary Myers, Bobby Begay, and a number of seasonal technicians and volunteers. The study was funded by the U.S. Fish and Wildlife Service.

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CONSERVATION NEWS

Compiled by Craig Harrison

RESTORING HAWAII'S ISLETS

Several agencies, including the U.S. Fish and Wildlife Service (USFWS) and the Hawaii Division of Forestry and Wildlife, have formed the Offshore Islet Restoration Committee. The group is restoring the flora and fauna of the small islets that lie offshore the main Hawaiian Islands. About 50 to 60 of the islets are thought to have nesting seabirds, and 36 are included in Hawaii's State Seabird Sanctuary. Most of the islets are located off the windward (east) side of the main islands and range in size from about 540 m² to several hundred ha. The program goals for these forgotten resources are public education, monitoring, increased enforcement, and restoration. There have been two successes already for Wedge-tailed Shearwaters (*Puffinus pacificus*). After introduced rats (*Rattus* spp.) were eliminated on Mokoli'i (Chinaman's Hat) off windward Oahu, 126 chicks fledged in 2002. On the Mokuluas, again off windward Oahu, ants that literally were eating shearwater chicks alive also have been eradicated.

BIOLOGISTS INVENTORY BIRDS AND THREATS TUAMOTO ISLANDS, FRENCH POLYNESIA

A major expedition to seldom-visited atolls in the central and southern Tuamotu Islands of French Polynesia took place in March 2003. Work on this international initiative started at a meeting in July 2002 among scientists and conservation administrators from the governments of Kiribati (Line Islands), the United States (Palmyra Atoll and Kingman Reef), Cook Islands (Penrhyn

Atoll), and Republic of French Polynesia (northern Tuamotu Archipelago). Its goals were to coordinate and enhance bird research, management, monitoring, and education activities in that part of the Pacific, and to link national bird programs so as to deliver bird conservation on a flyway basis.

The coral Tuamotu archipelago consists of 78 scattered, low-lying atolls, 300 to 1600 km from Tahiti. The total area of the archipelago, including water, is greater than 800,000 km², but less than 7% of the territory is inhabited. Some of the islands had not been visited for 60 years. Purposes of the expedition were to document the presence of endangered avian species, investigate the risk posed by mammalian pests, and survey seabirds. Cooperators on the field project included the Society of Ornithologists of Polynesia (Société d'Ornithologie de Polynésie), Wildland Consultants of New Zealand, USFWS in Alaska and Hawaii, and the U.S. Geological Survey in Alaska.

Among the objectives was to evaluate the status of seabirds on atolls throughout the chain and carry out the region's first systematic pelagic surveys. A major goal was to determine the presence and approximate numbers of the critically endangered Tuamotu Sandpipers (*Prosobonia cancellatus*), Bristle-thighed Curlew (*Numenius tahitiensis*), and two dove species. Another priority was to determine infestation levels of mammalian pests to facilitate recommendations for their eradication,

The most numerous species was the Common White Tern (*Gygis alba*), followed closely by the Brown Noddy (*Anous stolidus*), Red-footed Booby (*Sula sula*), and Lesser Frigatebird (*Fregata ariel*). Significant seabird colonies were found on 5 islands. Nearly 1500 individual birds belonging to 26 bird species were recorded during pelagic

surveys. The most common bird observed was the Brown Noddy (half the sightings), followed by the Common White Tern and Red-footed Booby.

Most islands appeared to have mammalian pests. Pest eradication appears technically feasible, but severe funding problems need to be overcome. It would also be important to alleviate potential concerns of local people and to show them what pest eradication can achieve. For further details see the Hawaii and Pacific regional report in this issue.

IMO PHASES OUT SINGLE-HULLED OIL TANKERS

In an international regulatory action that will greatly benefit seabirds, the United Nations' International Maritime Organization (IMO) will implement a ban on the transportation of heavy grades of oil by single-hulled tankers. The amendments to the 1973 Convention for the Prevention of Pollution from Ships (MARPOL) will also speed up measures to phase out certain types of single-hull tankers altogether. The ban on single-hulled tankers carrying heavy grades of oil will effectively require such oil to be transported only in double-hulled tankers. In addition, a compulsory condition-assessment scheme will be used to determine the structural integrity for tankers that are over 15 years old. There will also be an accelerated phaseout for "pre-MARPOL tankers" to 2005.

The announcement followed a ban in October by the European Union on single-hulled tankers carrying heavy oil. This was prompted by the December 1999 *Erika* oil spill off the coast of Brittany, in which 10,000 tons of heavy fuel oil spilled into the sea. Estimates of dead seabirds ranged as high as 300,000, with

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some 30,000 seabirds rescued and cleaned.

PSG URGES USFWS TO CONTROL RATS ON KISKA ISLAND, ALASKA

As we have reported earlier (*Pacific Seabirds* 30:9-10, 2003) the world's largest colony of Least Auklets (*Aethia pusilla*) at Sirius Point on the island of Kiska is under siege from introduced Norway rats (*Rattus norvegicus*). Crested Auklets (*Aethia cristatella*) there also are victims of rat predation.

PSG has written to USFWS to express its support for the removal of rats in the Alaska Maritime National Wildlife Refuge. The introduced rodents jeopardize the long-term health of one of the largest seabird colonies in the world. The refuge has begun a science-based planning effort to control rats in a portion of the Sirius Point colony to increase auklet survival and reproductive success. If that effort demonstrates that a control program could be effective, the next step would be starting either a long-term control program on a portion of the island, or an island-wide eradication effort. PSG strongly supports the proposal to remove the rats from the entire island, although we acknowledge that Kiska would become the largest island ever cleared of rats.

PSG has asked USFWS to ensure that the refuge be provided sufficient funds and other support to begin its control work at Sirius Point during the 2004 field season. PSG has also asked that USFWS begin planning a budget to provide up to several million dollars for complete eradication of rats from Kiska Island, in the event that planning and techniques have been perfected. PSG has also offered to provide leadership in the bird conservation community and the public for the effort to persuade the Environmental Protection Agency (EPA) to approve aerial application of rodenticides on the island, and to coordinate comments in case there is an opportunity for public input under the National Environmental Protection Act (NEPA).

MAUI LIGHTING ORDINANCE: POLICE VS. SEABIRDS

The Maui Police Department is trying to kill a lighting ordinance that may help Hawaiian Petrel (*Pterodroma sandwichensis*), Wedge-tailed Shearwaters (*Puffinus pacificus*), and other seabirds that are affected by urban lights. These birds, especially fledglings, become confused by bright lights when leaving their nests at night. They are often found on the ground at hotels, residences or county parks after they circle the lights and become tired. While some are retrieved and turned in to Haleakala National Park or State Division of Forestry and Wildlife Biologists, some are killed by cars, pets, or feral cats or mongooses.

COURT CLOSES LONGLINE FISHING OFF CALIFORNIA

The 9th federal Circuit Court of Appeals has ruled that the National Oceanographic and Atmospheric Administration-Fisheries (also known as the National Marine Fisheries Service [NMFS]) violated the Endangered Species Act by authorizing longline fishing off California without analyzing the fishery's impacts on endangered species. In August the court also held that NMFS is required by law to assess the potential impact of longlining on Short-tailed Albatross (*Phoebastria albatrus*) and all six species of sea turtles found in U.S. waters.

After the Hawaiian longline fishery for swordfish was shut down in November 1999 as a result of sea turtle bycatch, more than 30 longline vessels began landing their catch in southern California. The boats had fished without restriction beyond the 200-mile Exclusive Economic Zone. In July, NMFS urged the Pacific Fishery Council to prohibit shallow-set swordfish longlines, but the council refused. This fishery took 450 Black-footed and 17 Laysan Albatrosses (*Phoebastria nigripes*) and *P. immutabilis* from October 2001 to February 2003. The California mortality is

in addition to the almost 8,000 albatrosses known to have been taken between 1993 and 2001 in Alaska and the more than 18,000 taken in Hawaii in approximately the same period.

INCREASED SQUID FISHERY NEAR FARALLONS RAISES SEABIRD CONCERNS

Squid fishery activities near the Farallon Islands National Wildlife Refuge increased dramatically in autumn 2003. California Department of Fish and Game (CDF&G) data show that average landings increased over 4400 times during the past decade, from 0.30 tons to 1,323 tons. This increase in fishing activity led to increased observations of disturbance of seabird colonies by lights and of interactions between fishing vessels and seabirds. If this type of fishing pressure continues near the Farallons, there is high potential for direct and indirect negative effects on seabird populations. Increased lighting may result in disruption of the vertical migration of seabird prey, and in depletion of squid resources near the island, both of which may have strong effects on the seabird populations. In addition, more predation on nocturnal seabirds and may occur.

The PRBO bird observatory, USFWS, Ocean Conservancy, and Natural Resources Defense Council have raised this issue with the California Fish and Game Commission. They are assessing potential restrictions on the squid fishery adjacent to the Farallons, as well as other near Northern California seabird colonies, to reduce negative impacts on seabirds.

—Russ Bradley, PRBO Conservation Science.

SOUTHERN CALIFORNIA SQUID FISHERY

At the Channel Islands off southern California, interim regulations have been put in place by the California Fish and

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Game Commission to minimize the impacts of lighting on seabirds, including Xantus' Murrelets (*Synthliboramphus hypoleucus*) and Ashy Storm-Petrels (*Oceanodroma homochroa*) (see *Pacific Seabirds* 29:98, 2002). No squid fishing is allowed now within one mile of Santa Barbara and Anacapa Islands. Outside this closed area, squid light-boats may operate, but wattage is limited (30,000 W per boat), and all lights must be shielded to direct the lighting down into the water column.

The squid fishery management plan is still in preparation by CDF&G. It contains options for the limitation of lighting at many Channel Islands. Issues pertaining to total annual harvest are being discussed, within a possible range of 60,000–125,000 metric tons. A precautionary approach to protect the ecosystem would likely mean an annual harvest cap of 60,000 to 80,000 metric tons. The California squid fishery remains the largest and most lucrative fishery along the U.S. west coast. Based on ecosystem considerations, the North Pacific Fisheries Management Council has adopted a “no fishing for forage” policy for US waters in the Gulf of Alaska and Bering Sea. This policy could be adopted by the Pacific Fisheries Management Council for federal waters off California, Oregon and Washington, and by the California Fish and Game Commission for state waters off California.

—Bill Sydeman, PRBO Conservation Science.

NATURAL GAS TERMINALS PROPOSED OFF CALIFORNIA AND BAJA CALIFORNIA

Several new facilities for receiving and regasifying liquefied natural gas (LNG) have been proposed offshore the west coast of North America. This development of concern to PSG, particularly because of lights and other pollution might affect procellariids and alcids

such as Xantus's Murrelets. With the increasing price of natural gas in North America, importing gas from abroad has been attractive, and LNG facilities are needed to receive and process the gas. Virtually all fossil-fuel generation for electricity in California is fired by natural gas, which is a cleaner fuel than coal.

Offshore mooring platforms have been proposed 21 miles offshore Ormond Beach in Ventura County (BHP Billiton), and at Platform Grace in the Santa Barbara Channel (Crystal Energy). Another has been proposed eight miles off the northern Baja California coast near the Coronado Islands (ChevronTexaco). While structures such as offshore oil rigs have been operating for decades, offshore LNG terminals are a new development. Offshore locations are desirable because local residents often strongly object to building LNG terminals on the coast. In addition, offshore locations protect coastal land and have no visual impacts onshore. The proposed offshore terminal in Baja is located about a third of a mile from the Coronados, halfway between the towns of Tijuana and Rosarito. It would be a fixed 980-foot-long concrete island with two regasification plants, storage tanks, a heliport, and a dock that would receive about four LNG tankers each week. About 1200 employees would live and work aboard the structure in 14-day shifts. The facility is proposed to begin operations by late 2007.

Threats to seabirds from LNG terminals may be deemed an acceptable risk by decision-makers, who must balance environmental concerns over offshore terminals against the inevitable “not in my backyard” objections to onshore facilities. Offshore LNG facilities are out of public view and therefore are more acceptable politically than alternative locations. Environmental organizations may be able to find less public support than they would like on this issue.

GUIDELINES FOR WIND TURBINES

The U.S. Fish and Wildlife Service has issued guidelines for the location and design of land-based wind energy facilities. The voluntary interim guidelines are intended to avoid or minimize the loss of wildlife, particularly birds, and their habitats. Many species of birds, including seabirds, are attracted to lights such as those that would be placed on wind turbines. The interim guidelines apply to federal lands and do not apply directly to private or state-owned lands.

A 2001 study by the National Wind Coordinating Committee indicated that some turbines produce no avian mortality, particularly those of newer design. The new guidelines are designed to minimize impacts from what is generally regarded as an environmentally-friendly means of electricity generation.

The guidelines focus on three key issues: the proper evaluation and selection of potential wind energy development sites, the proper location and design of turbines and associated structures, and research and monitoring to identify and assess impacts on wildlife. USFWS will collect public comment on the guidelines for two years. Given that many of the data (pre-construction siting analyses and post-construction monitoring) are not readily available, and that there has been little study on indirect impacts (habitat alteration), it may be difficult to assess these guidelines and provide comments. To view the guidelines, visit www.fws.gov/r9dhcbfa/wind.pdf.

STUDY SAYS POLLUTION FROM EXXON VALDEZ SPILL CONTINUES TO HARM WILDLIFE

A review article by Charles H. Peterson of the University of North Carolina at Chapel Hill and others has revealed that impacts from the 1989

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Exxon Valdez oil spill have lasted much longer than expected, and that low levels of residual pollution have caused chronic harm to fish and wildlife. The study contradicts the idea an oil spill inflicts harm only through its acute toxicity in the early days of an event.

In particular, the study reports that for species that are faithful to particular sections of shoreline throughout much of their lives, such as Harlequin Ducks (*Histrionicus histrionicus*) and sea otters (*Enhydra lutris*), survival rates in heavily oiled areas were far lower than in unoiled areas. Harlequin Ducks have suffered from long-term, low level exposure to oil pollution. Ducks in areas of the sound that were heavily oiled have shown poor survival rates, compared to ducks in unoiled areas, during mid-winter periods when conditions are most stressful for the birds.

The study has implications for oil spill prevention and response. Prevention and response plans, as well as environmental impact statements and state water-quality standards, have focused on addressing immediate, acute damage. Addressing sublethal effects would require preparedness and cleanup plans, and environmental impact statements would need to be more complex and more expensive. Review of the impacts of the effects of the *Exxon Valdez* spill show that long-term environmental harm is caused by polycyclic aromatic hydrocarbons at levels of one part per billion. However, Hill said, short-term toxicity testing occurs at the level of parts per million.

A spokesman for ExxonMobil has emphasized that while oil spills can have acute short-term effects, the environment has remarkable powers of recovery. The company noted that beaches still contaminated with residual oil amount to only about 26 acres, less than one percent of Prince William Sound's shoreline.

The article by Peterson et al. appeared in *Science* 302 (5653):2082-2086, 19 December 2003.

USFWS APPROVES DEPREDATION ORDER FOR CORMORANTS

The U.S. Fish & Wildlife Service published a final rule in the Federal Register in October for the management of Double-crested Cormorants (*Phalacrocorax auritus*). USFWS will allow state wildlife agencies, Native American tribes, and the US Department of Agriculture's Wildlife Services division to take unlimited numbers of cormorants in 24 states where the birds are "injurious to a public resource" (defined as fish, wildlife, plants, and other habitats). The rules are intended to reduce damage to hatchery and commercial aquaculture production. Proponents of the new rule contended that increasing populations of Double-crested Cormorants have caused biological and socioeconomic resource conflicts. Unlike the current regulations, the new ones will require no permits to take birds, destroy their eggs, or disturb their roosts or breeding sites. The new rule expands the current aquaculture depredation order, which has been in place in 13 States since 1998, to allow Wildlife Services to take cormorants at winter roost sites.

The approval process took four years, including hearings, public comment periods, and development of an environmental impact statement.

USFWS received more than 9700 comments on the proposed rule, 85% of which opposed it, including those from PSG. To some extent, cormorants are being made scapegoats for declines in fish stocks (including sport fish species) that are caused by other factors. Under the previous system, approximately 47,000 Double-crested Cormorants were taken each year, and thousands of eggs were destroyed. Under the new rule, USFWS allows state and federal agencies in 24 states to decide when, where, and how many birds they will take.

ENDANGERED CAHOW SURVIVES BERMUDA HURRICANES

Bermuda suffered its worst storm in more than a century when Hurricane Fabian struck in early September with winds of 250 km/h. Later in the same month, Tropical Storm Juan hit with sustained winds of 95 km/h. These events were potentially disastrous for the country's national bird, the Bermuda Petrel or Cahow (*Pterodroma cahow*), which numbers only around 180 individuals. Hurricane Fabian destroyed many of the petrels' nesting burrows. At least 10 out of the 70 active nest burrows on four tiny Bermudan islets were completely destroyed, as the sections of the island where they were located were swept away. Fortunately the birds were not at their nesting grounds at the time. Bermuda residents rushed to repair the burrows and relocate them to higher levels in time for the petrels' return.

The species was thought to have been extinct since 1620, until a few birds were rediscovered in 1951. Intensive management, including the construction of artificial burrows, has resulted in an increase in Cahow numbers from 18 pairs in 1962 to 70 pairs in 2003, when a record of 40 young were reared. The drastic population decline of Cahows is attributed to habitat loss, exploitation and predation. Recovery of the species has been hampered by competition from the White-tailed Tropicbird (*Phaethon lepturus*) for nest sites.

The four islets, which are part of the Castle Harbor Islands National Park in the east, are the last remaining refuge for the petrel. Potential breeding islands have been reforested with native plants in an attempt to attract nesting petrels in the future.

The Cahow is important to the history of Bermuda. The bird is credited with keeping the Spanish conquistadores from adding the 34 km² territory to their vast American empire, because they believed the Cahow's shrill cries were

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those of the dead and were too terrified to stay on Bermuda.

BIRDLIFE INTERNATIONAL SAYS ALBATROSSES FACE GROWING PERIL

BirdLife International says that populations of six of the 21 albatross species have recently shown "a further alarming decrease" due to longline fishing. Longline fishing, especially by pirate vessels, is blamed for taking 300,000 seabirds annually, a third of them albatrosses. The birds swallow the baited hooks on the fishing lines, which can be 130 km long, and either die of their injuries or simply drown.

BirdLife says that all 21 species face some risk of decline. Its assessment is based on the classification used for the Red List of threatened species that is compiled by IUCN-The World Conservation Union. The five relevant categories are critically endangered (a species facing an extremely high risk of extinction in the wild), endangered (very high risk); vulnerable (high risk), near-threatened (close to qualifying as vulnerable), and least concern (a category including widespread and abundant species).

BirdLife made the following changes to the year 2000 classifications:

- Atlantic Yellow-nosed Albatross (*Diomedea chlororhynchos chlororhynchos*) from near-threatened to endangered
- Black-browed Albatross (*Diomedea melanophris*) from near-threatened to endangered
- Black-footed Albatross from vulnerable to endangered
- Sooty Albatross (*Phoebastria fusca*) from vulnerable to endangered
- Indian Yellow-nosed Albatross (*Diomedea chlororhynchos bassi*) from vulnerable to endangered
- Laysan Albatross from least concern to vulnerable.

The most threatened species of all, the Amsterdam Albatross (*Diomedea amsterdamensis*), already classed as critically endangered, now faces an additional threat from disease. Only about 20 pairs breed each year, and chicks are dying more often.

NMFS ANNOUNCES BYCATCH LIMITS FOR SHORT-TAILED ALBATROSS IN ALASKA

The National Marine Fisheries Service (NMFS) has announced two biological opinions that were recently issued by USFWS concerning effects of the Alaskan groundfish fisheries on threatened and endangered seabirds. One opinion is at the programmatic level and addresses the effects of the annual groundfish Fishery Management Plans on these birds. The other opinion concerns the effects of the plan-writing process, during which the total allowable catch is set each year for the fisheries, on these birds. The latter opinion includes limits on incidental take of the endangered Short-tailed Albatross.

Both opinions conclude that the groundfish fisheries are not likely to jeopardize the continued existence of the Short-tailed Albatross or the Steller's Eider (*Polysticta stelleri*), or to result in adverse modification of Steller's Eider critical habitat. No critical habitat has been designated for the Short-tailed Albatross. USFWS also concurred with NMFS's determination that these actions are not likely to adversely affect the threatened Spectacled Eider (*Somateria fischeri*). The biological opinions can be found at <http://www.fakr.noaa.gov/protectedresources/seabirds/section7/ biop.htm>

USFWS anticipates that up to four Short-tailed Albatrosses could be taken every two years in the longline fishery off Alaska. The agency also anticipates that up to two Short-tailed Albatrosses

could be taken in the trawl fishery off Alaska over the period in which the biological opinion remains in effect (approximately 5 years). These incidental take limits are in addition to the limit established in 1998 for the Pacific halibut longline fishery off Alaska—two Short-tailed Albatrosses in a two-year period. If bycatch of Short-tailed Albatrosses exceeds any of these anticipated levels, NMFS must immediately reinstate consultation with USFWS, in order to consider possible modifications to the fishery. Modifications could range from changing the ways seabirds are kept away from fishing gear, to outright closure of the fishery.

NEW REQUIREMENTS FOR SEABIRD AVOIDANCE ' MEASURES IN ALASKA'S LONGLINE FISHERIES

New federal regulations have been published that will revise methods used to reduce seabird bycatch in Alaska's offshore longline fisheries. The final rules were published in the *Federal Register* on 13 January 2004; they will come into force on 12 February.

Alaskan longline (hook-and-line) fisheries primarily take Pacific cod (*Gadus macrocephalus*), sablefish (*Anomlopoma fimbria*) and halibut (*Hippoglossus stenolepis*). Each vessel lays a "ground line" several km long, from which hundreds of baited hooks are suspended, on the sea floor. Seabirds (primarily albatrosses [*Phoebastria* spp.] and fulmars [*Fulmaris glacialis*]) are attracted to the baited hooks as they descend from the vessel into the water, and some are caught and drowned. The regulations that have been in force since in April 1997 required that birds be deterred from seizing the hooks by the use of one or more measures: a streamer line or towed object, setting the line underwater, or setting it at night (*Pacific Seabirds* 24:6-7, 1997). The new regulations are

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NOAA-F's response to a major study by Ed Melvin and Julia Parrish, which documented the effectiveness of some avoidance measures.

A summary of the new regulations is given below (with thanks to Kim Rivera of NOAA-F). For an official summary see "Seabird Bycatch Information for Alaska Fishermen," at <http://www.fakr.noaa.gov/protectedresources/seabirds/guide.htm>. Details are in the full regulations in the *Federal Register*.

The new regulations require that:

- Seabird avoidance measures must be used whenever hook-and-line gear is being deployed. The avoidance gear must be available for inspection upon request by officials.
- The gear must consist of a line or lines designed to deter seabirds from taking baited hooks (paired streamer lines, a single streamer line, or a buoy bag line).
- Discharge of offal (fish scraps) must be controlled, so as not to attract birds to any area of water containing baited hooks. Hooks must be removed from offal that is thrown overboard.
- A "Seabird Avoidance Plan" must be written (and an up-to-date one must be onboard the vessel). This is a completely new requirement. Fishers can obtain a form for assembling the avoidance plan at <http://www.fakr.noaa.gov/protectedresources/seabirds/torilines/form.pdf>

Streamer lines and other deterrents are now specified, depending on the size and location of the vessel, its superstructure, and the exact type of fishing gear. For instance,

- Larger vessels (greater than 16.8 m length overall, and fishing in the EEZ) must use paired streamer lines, and the materials and performance of the streamer lines are specified in detail.
- Smaller vessels (between 7.9 m and 16.8 m) must use a single streamer line or, in limited instances, a buoy bag line (which bobs in the vessel's

wake and scares the birds away). Performance and material standards are not specified for smaller vessels.

- In certain situations an additional device must be used, such as weights added to the main line (to make it sink faster below the reach of birds), or a second buoy bag line or streamer line. In some cases offal (fish scraps) must be discharged from the vessel in such a way as to distract birds away from baited hooks.

Several former options for deterring have been deleted from the regulations. They include fishing at night (which does not reduce the risk for seabirds that feed nocturnally), and deploying the line through an underwater tube (which has not been shown to keep the bait deeper than birds can forage).

The new seabird avoidance measures are required in these longline fisheries:

- In general, all fisheries for groundfish (benthic and near-benthic fish) in the Exclusive Economic Zone (EEZ, between 3 and 200 nautical miles [nm] from shore)
- Pacific halibut fisheries—the Individual Fishing Quota (IFQ) and Community Development Quota (CDQ) programs—from the shore to 200 nm offshore;
- The IFQ sablefish fishery in the EEZ, and also in many state waters (from the shore out to 3 nm)

Most groundfish fisheries from the shore out to 3 nm are covered by state regulations instead of these federal rules.

Streamer lines are provided to fishers at no cost by USFWS (<http://www.fakr.noaa.gov/protectedresources/seabirds/streamers.htm>)

PSG COMMENTS ON DRAFT ALASKA GROUND- FISH ENVIRONMENTAL IMPACT STATEMENT

Thanks to Vivian Mendenhall, PSG and the National Audubon Society jointly filed comments on the current draft of NOAA-F's environmental impact statement on the management of Alaska groundfish fisheries (see *Pacific Seabirds* 28:69, 2001). This 7000-page document is the agency's fourth attempt at writing the Draft Programmatic Supplementary Environmental Impact Statement (DPSEIS), which is supposed to assess the effects of fishery management on fish populations, seabirds, marine mammals, and the environment. PSG found that the document still does not consider seabirds adequately.

PSG noted that its goal is to maintain the diversity and abundance of the globally significant seabird populations in North Pacific. Although the DPSEIS gives plenty of attention to the important goal of restoring threatened and endangered species, PSG places equal or greater priority on maintaining healthy populations of still-common species, especially those that are endemic to the Bering Sea and Gulf of Alaska.

It was evident that the plan needs more input from people with seabird expertise, and PSG made many technical suggestions to correct inaccurate statements or concepts. A major problem was that seabird sections of the DPSEIS were poorly coordinated; it was often unclear what was being proposed with respect to seabirds, because different goals were mentioned in different parts of the report. PSG suggested that the final document should incorporate a number of measures to improve protection of birds and decrease their risk of severe impacts from fisheries. Among these should be improvement in observers' reports from trawlers; improvement of observer training for identification of dead seabirds; collecting the heads and feet of all unidentified birds, to allow experts to identify them later; supporting research on populations, trends, and foraging behavior, and food requirements of seabird species of concern; and incorporating "thresholds of mortality" for incidental take of seabirds, similar to those now used for marine mammals.

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The plan fails to acknowledge that food availability for seabirds may have been affected by fisheries, at least over the long term. In fact, the writers seemed unaware of much recent research into seabird-prey relationships (although the research was summarized in the Affected Environment chapter of the very same document). Finally, the plan does not acknowledge that large-scale fisheries can exacerbate changes in the marine ecosystem that have been initiated by other factors, such as climate shifts.

It is to be hoped that NOAA-F can correct the deficiencies in this draft document efficiently, without having to rewrite the whole thing again. It could then provide a blueprint for ecosystem-based fishery management, including responsible protection for seabirds.

VIDEO TO HELP ALASKAN LONGLINE FISHERS KEEP SEABIRDS OFF HOOKS

The Washington Sea Grant Program has released "Off the Hook," an educational video on avoiding seabird bycatch for longline fishermen in Alaskan and other North Pacific waters. It portrays a variety of seabird species, in flight and interacting with fishing gear; it also demonstrates how to rig and deeply streamer lines, as now required on most Alaskan longline vessels.

The video is being distributed to all Federal Fisheries Permit holders who will be affected by the forthcoming seabird bycatch regulations in Alaska—those with a hook-and-line endorsement or an Individual Fishery Quota (IFQ) permit. A limited number of copies are available in either NTSC format (for North American video players) and in PAL (Eurasian) format; more information is at sgpubs@u.washington.edu or (206) 5543-0555. It can also be downloaded from <http://www.wsg.washington.edu/outreach/mas/fisheries/seabirdvideo.html>.

The video was produced jointly by the Washington Sea Grant Program and

the Marine Advisory Services of the University of Alaska, Fairbanks. Funding was provided by the U.S. Fish and Wildlife Service. It is being duplicated and distributed with funding from the Alaska Department of Fish Game.

FUTURE OF HABITAT CONSERVATION PLANS UNCERTAIN AFTER RULING AGAINST "NO SURPRISES" POLICY

A U.S. District Court ordered USFWS and NOAA-F to reconsider their "No Surprises" policy. This policy said that landowners who engage in habitat conservation plans would not be obligated to commit any additional money or resources if unforeseen circumstances arose, and that the federal government will not come back with additional requirements once a Habitat Conservation Plan is in place. The court said the agencies had committed "flagrant violations" of the Administrative Procedures Act's requirements for notice and public comment while it was developing the "No Surprises" policy. The ruling may have an immediate effect on over 300 habitat conservation plans that are currently being developed.

Habitat conservation plans are legally binding agreements between landowners and the government, in which the landowner adopts conservation measures to protect land and water resources used by threatened or endangered species. In exchange, the government issues an incidental take permit, which allows the landowner to develop his or her property. Approximately 400 such agreements are in place, covering more than 500 species on 38 million acres.

The Clinton administration finalized the No Surprises rule in 1998. The policy was followed in 1999 by the Permit Revocation rule, which established procedures for the agency to revoke an incidental take permit if a habitat conservation plan proved to be harming the listed species rather than helping them. The

second rule was issued after Spirit of the Sage Council filed a lawsuit challenging the No Surprises rule.

The court wrote that the Permit Revocation rule "significantly raises the bar as to the degree of harm to listed species which must be likely to occur in absence of corrective action before an incidental take permit can be revoked." It said that the agencies did not give adequate public notice before they issued the Permit Revocation rule—and that their request for public comment in February 2000 was a half-hearted attempt to correct the problem.

The court vacated the permit revocation rule and remanded it to the agencies for further consideration consistent with the Administrative Procedures Act. Moreover, the court found that the relationship between the Permit Revocation rule and the No Surprises rule makes it necessary to return both rules to the agencies for reconsideration.

USFWS CITES DAVID WOODSIDE FOR SUPERIOR SERVICE

In recognition of his dedication to the U.S. Fish and Wildlife Service and for his outstanding and long-term contributions to the conservation of Hawaii's natural resources, David Woodside received the Superior Service Award of the Department of the Interior in December.

Woodside's career has included 27 years as a biologist for the Territory and State of Hawaii (including managing seabirds in the Northwestern Hawaiian Islands) followed by 22 years with the Service. He relocated the Hawaiian Petrel (*Pterodroma phaeopygia*), a species once thought to have been extinct. His extensive experience in Hawaii's natural environments, his encyclopedic knowledge of the state's plants and animals, and his willingness to assist others have allowed him to play a significant role in the conservation of Pacific island native species. David Woodside has also served as a mentor and teacher for several generations of Hawaii's biologists.

PSG NEWS

PSG CONSIDERS HOW TO PAY FOR PUBLISHING

The Pacific Seabird Group has published *Pacific Seabirds* for 30 years to inform members about regional seabird topics and PSG activities. For the past several years we also have published the international journal *Marine Ornithology* jointly with the African Seabird Group. During the past year the Executive Council has been considering during the past year how PSG should best support these journals. A nonbinding poll on publishing options was sent to members in December 2003, so that the Exco can learn how people feel on the issue. The poll listed 3 options, with approximate costs to PSG, and asked if members would be willing to increase PSG's dues accordingly:

1. Publish 2 issues of *Pacific Seabirds* as hard copy (~\$7000), and publish *Marine Ornithology* on the web (~\$7000); increase dues \$ 15/yr to pay for the costs.
2. Publish *Marine Ornithology* on the web (~\$7000), and a single issue of *Pacific Seabirds* each year as both hardcopy and electronically, with the option to receive it in either format. (Cost is unknown, but probably \$3000 to \$5000). The dues increase would be about \$10/yr.
3. Publish *Pacific Seabirds* on the web (~\$1000) and *Marine Ornithology* on the web (~\$7000), and increase the dues \$5/yr to pay for the costs.

The Exco hopes to decide at the January 2004 meeting how each journal will be provided to members, based as much as feasible on the results of the poll.

WANT TO STAY ON MAILING LIST? SEND CHANGE OF ADDRESS!

If you change your address and you want to keep getting *Pacific Seabirds*,

meeting notices, and ballots, be sure that you send PSG your new address. The best way to do this by sending an e-mail to the Treasurer (whose address is on PSG's web site, and also inside both covers of *Pacific Seabirds*).

Do not just assume that the post office will forward things. Although we request that forward *Pacific Seabirds* be forwarded, the post office charges \$.70 per item for that service. And often they return the item to the Editor (including after they have added the correct address!), for which PSG has to pay about \$4.00 per item. (If you can explain that, you deserve an award...) PSG cannot afford to pay for several dozen returns per issue.

The Editor usually cannot re-send *Pacific Seabirds* that are returned with faulty addresses. Please let us know if an issue is seriously overdue. (You should e-mail the treasurer, who will fix the mailing list if needed; he will then forward the message to the editor, who tries to keep up with requests for replacement issues.)

Notifying everyone is easy to forget, in the confusion of moving or retiring. But once there was an Exco member who moved twice in one year without informing PSG of either change...

ELECTION RESULTS FOR 2004 EXECUTIVE COUNCIL

Following the PSG election in late 2003, the Executive Council for 2004 welcomes the following members:

- Chair-elect: Bob Day
- Secretary: Ron Ydenberg
- Regional Representatives:
 - Alaska and Russia: Verena Gill (incumbent)
 - Northern California: Esther Burkett
 - Pacific Rim: Beth Flint (incumbent)
 - Old World: Mark Tasker

(incumbent)

- Student Representative: Shihway Wang

Continuing members will include Dan Roby (who becomes Chair), David Irons (who becomes Past Chair), Craig Harrison (Vice-chair for Conservation), Ron LeValley (Treasurer), Vivian Mendenhall (Editor of *Pacific Seabirds*), Louise Blight (Regional Representative for Canada), Katie O'Reilly (Washington-Oregon), Mark Pierson (Southern California), and Malcolm Coulter (Non-Pacific United States). Contact information for Exco members is on the inside back cover of this issue.

CANADIANS: SEND DUES TO MORGAN, NOT BLIGHT

Canadians and Britons may pay PSG dues in their own currencies, thanks an individual in each country who receives the payments and forwards them to the PSG treasurer. This was noted in the last issue of *Pacific Seabirds*, 30(1), 2003, on pages 14 and 77. However, the person to whom Canadians should send their dues was given incorrectly as regional representative Louise Blight. Please send Canadian dues to: Ken Morgan, Institute of Ocean Sciences, P.O. Box 6000, 9860 West Saanich Road, Sidney, BC, Canada, V8L 4B2. (The information on PSG dues within the United Kingdom was correct—send them to Mark Tasker.)

PSG TREASURER'S REPORT

The PSG Treasurer's Report for the past year is usually published in the fall issue of *Pacific Seabirds*. The report for PSG's fiscal 2003 year (1 September 2002-31 August 2003) will appear in the spring 2004 issue.

SEABIRD NEWS

LEAST AND CRESTED AUKLET WORKSHOP

Least and crested Auklets (*Aethia pusilla* and *A. cristatella*) are among the most numerous seabird species in the Bering Sea. Monitoring their population trends is therefore of vital interest for conservation of the species and for our understanding of the ecosystem.

However, the population trends of auklets have never been adequately assessed. Their life-history attributes make monitoring very difficult: they live in immense colonies, nest in crevices that usually cannot be accessed (unless one wants to move boulders that weigh many tons), and have highly variable activity periods. A variety of methods have been tried to detect changes in numbers of breeding auklets in the past several decades. The current method used in Alaska is to make repeated counts of birds on the surface of the colony and to compare these counts among years. However, surface counts have not yielded reliable indices detailed trends—for instance, only a small proportion of birds are visible on the surface at any one time, and the relationship between surface numbers and the total population is uncertain.

Because of the difficulty of detecting changes in auklet populations, the Alaska Seabird Working Group convened an Auklet Workshop on 21 March 2003 to discuss possible methods for monitoring Least and Crested Auklets. We came up with a number of suggestions and a few conclusions, which are presented in the following list.

It should be noted that plans are already underway to implement mapping of auklet colonies as a tool for monitoring (IIa below).

I. Tracking changes in auklet populations

a. Surface counts—Their usefulness is debatable, but at a minimum they have value in detecting large (order of magni-

tude) changes in populations. Because surface counts are relatively low-effort compared to some other methods, this tool will probably continue to be a main source of information.

b. Mark-resighting—This method provides good information but is time-intensive. Perhaps we could get comparable information by resighting a lower percentage of birds, which would make this method easier to implement.

c. Lichens—Examining lichen cover on rock surfaces is a potential way to estimate current and historical colony areas. We do not yet know how long lichen remains in an area after birds have left. This will undoubtedly vary with latitude and plant succession rates. More information is needed on this topic.

d. Remote sensing—There was some discussion of using aerial survey techniques and infrared to examine colony size.

II. Colony Atlas

a. Develop an atlas of all auklet colonies over the next several years. This would be accomplished by surveying colony perimeters using GPS. Colonies could then be re-surveyed in the future to determine whether they are expanding or contracting. This could potentially be combined with density estimates (a shrinking colony may become less dense rather than occupy less area), and monitoring of plots on the periphery of colonies. The use of lichens as an indicator of colony area occupied may be a useful tool.

b. Hiring professional surveyors to map out colonies may be useful, as this would be more accurate (including slope, aspect, etc.).

III. Population Modeling

a. In order to establish widespread population modeling as a tool to track changes, more banded populations need to be monitored over time to estimate survival.

b. Reducing resighting effort to less than 100% of banded birds may be a feasible way to obtain survival data while minimizing observation time when resighting rates are high.

IV. Population endocrinology—Corticosterone

a. Stress hormones as indicators of food availability and abundance can be used to assess the response of different populations to the same oceanographic event. A small sample of 10-15 birds may be sufficient. Collection of blood samples is a relatively low-effort technique, and samples can be archived (frozen) until there are resources for analyzing them. The number of colonies sampled should be increased.

V. At-sea surveys

a. Boat-based surveys are costly; however, we have very little information on auklets at sea, especially in winter. One option may be infrared sensing to look at groups of birds on the surface. Near-shore surveys may also be useful and would be less costly.

VI. Genetics

a. Phylogeography of Auklets—The development of a good population structure to identify birds in the nonbreeding season is needed. For example, if birds wash up on the beach we may be able to determine their colony of origin.

VII. Vocal detection

a. The amount of noise (in decibels) may be developed as an index of auklet population size and colony attendance patterns. For example, sound recorders could be placed on a colony for 24 hr/day during the breeding season, and later analyzed to determine attendance patterns.

For more information, contact **David Irons**, U.S. Fish and Wildlife Service, Anchorage (David_Irons@fws.gov)

SEABIRD NEWS

SHORT-TAILED ALBATROSS EXTIRPATED IN BERMUDA BY SEA- LEVEL RISE

Albatrosses do not occur in the North Atlantic Ocean today except as vagrants, although five species were present in the early Pliocene. Storrs L. Olson and Paul J. Hearty have found what are apparently the first fossil breeding sites of albatrosses in the Atlantic. Deposits that formed near present-day sea level along the southeastern shore of Bermuda contain remains of a former breeding colony. Among the findings were intact eggshells and the bones of embryos, juveniles, and adults of Short-tailed Albatross (*Phoebastria albatrus*). This species is now endangered and confined to a few islands in the northwestern Pacific Ocean. The deposits seem to be from the middle Pleistocene, about 400,000 years ago. Soon thereafter, sea levels rose by over 20 meters. Olson and Hearty suggest that the extirpation of albatrosses on Bermuda resulted from the

absence of suitable nesting sites after sea levels rose significantly.

see <http://www.wpcouncil.org/nwhisymposium.htm>.

SYMPOSIUM ON RESOURCE INVESTIGATIONS IN THE NORTHWESTERN HAWAIIAN ISLANDS

The Third Scientific Symposium on Resource Investigations in the Northwestern Hawaiian Islands will be held in Honolulu, Hawaii, on 5-9 April 2004. This symposium will provide a forum for the review and synthesis of recent scientific developments in ecological, biological, oceanographic, and resource assessment research in these remote islands, as well as a mechanism to delineate future research needs. Topics will include seabirds, marine mammals, marine turtles, invertebrates, fisheries, oceanography, habitat requirements, socioeconomic, management strategies, and assessment methodologies, including ecological and foraging models. For more information,

INTERNATIONAL ALBATROSS AND PETREL CONFERENCE IN URUGUAY

The Third International Albatross and Petrel Conference will be held in Montevideo, Uruguay, on 23-27 August 2004. It is sponsored by Aves Uruguay-G.U.P.E.C.A. and will take place in the "Torre de los Profesionales" Conventions and Meetings Center of Montevideo. Sessions will include: (1) Systematics and Genetics, (2) General Biology and Behavior, (3) State and Population Trends, (4) Population Dynamics, (5) Energetics, Physiology and Illnesses, (6) Feeding, (7) Incidental Mortality and its Reduction, and (8) Politics of Conservation and International Initiatives. More information is at <http://www.iapc2004.com>.

CORRECTIONS

One of the authors was omitted from the abstract by Falk Huettman that was printed in *Pacific Seabirds* 30(1), 2003, page 38. Authors for the abstract, "A digital habitat 'fly-through' model—scenario for nesting Marbled Murrelets in Desolation Sound, British Columbia," should have been given as Falk Huettmann and Kirk Montgomery. Both were at the Geography Department, University of

Calgary, 2500 University Drive NW, Calgary, Alberta T2N 1N4, Canada.

The person to whom Canadians may send their PSG dues in Canadian currency was given incorrectly in *Pacific Seabirds* 30(1) as Louise Blight. The error occurred on two pages: in "PSG News," page 14, and on the Membership Form, page 77. Canadian dues should be sent to: Ken Morgan, Institute of Ocean Sciences, P.O. Box 6000, 9860 West

Saanich Road, Sidney, BC, Canada, V8L 4B2.

Kees Vermeer was inadvertently left off the list of PSG Life Members in *Pacific Seabirds* 30(1), 2003, page 76. The editor received a call from Kees, who wanted to make it clear that he is alive and enjoying it. He remains very much interested in PSG, although his winters in the Philippines have interfered a bit with attending PSG meetings.

REGIONAL REPORTS

Regional reports summarize current seabird work of interest to PSG members. Reports generally are organized by location of the work rather than by affiliation of the biologist.

RUSSIAN FAR EAST

Compiled by **Verena A. Gill**

There are many marine bird colonies under the protection of the Kurilsky Nature Reserve in the Kuril Islands of Russia. Recently, this isolated reserve has been experiencing a sharp increase in fishing pressure in the waters surrounding it. Consequently, many marine birds have been perishing in gillnets, making it even more crucial to obtain information on the status and distribution of seabird species in the area. Seabird work on the South Kuril Islands, Russia, is led by **Maria Ushakova** of the Kurilsky Nature Reserve (kurilsky@ostrov.sakhalin.ru; macshuta@rambler.ru). Ushakova is a postgraduate student at Moscow State University, Russia, and the ornithologist at the Kurilsky Nature Reserve. One of her areas of interest is molecular biology. Studies on the Kurils have been focusing on Tufted Puffin (*Lunda cirrhata*), Rhinoceros Auklet (*Cerorhinca monocerata*), and Spectacled Guillemot (*Cepphus carbo*). All three species nest in two very densely populated colonies on Rogacheva and Demina Islands.

Projects on the Kurilsky reserve are not limited to colony work—there is also research conducted at sea. Examples of ongoing studies include: mate and nest site fidelity, philopatry, nest site selection and competition, chick survival and growth, at-sea behavioral observations, foraging and distribution, the impact of predators and humans, and the limitations of predicting the future. To obtain much of this information, biologists on the refuge conduct 24-hour observations for all 3 species during the entire reproductive period (5 days on the colony, then 5 days on the sea and so on). In addition many adults and chicks are banded and mea-

sured. From these studies, recommendations on methodology, management, and habitat preservation are developed. Results of the studies will be presented back to local community members, schools and numerous frontier guards, and the scientific community. It is hoped that local people (especially children) will take part in collecting information about marine birds.

In June-July 2003, **Yuri Artukhin**, a research scientist in the Laboratory of Ornithology at the Kamchatka Branch of Pacific Institute of Geography (Far East Department of Russian Academy of Sciences) completed a seabird census on all the islands in the Kurile Chain. This study was started in 2000. The data showed new southern or northern range limits of some seabird species along the Kurile Islands. He also surveyed transects in South Kamchatka and on the Kurile Islands to determine the distribution and abundance of seabirds in the coastal waters during the summer.

Artukhin initiated a study of seabird bycatch in the longline fishery in the Russian part of the Bering Sea. The project was funded by the World Wildlife Fund (Bering Sea program). Preliminary data on the scale of seabird mortality were collected. One Short-tailed Albatross (*Phoebastria albatrus*) was caught on a hook this summer. This is the first record mortality of this species in a fishery in Russian waters.

At the moment Artukhin is editing and preparing to publish the fifth volume in the annual series "The Biology and Conservation of the Birds of Kamchatka." The book contains several papers dedicated to seabirds of Kamchatka and adjacent regions.

L.A. Zelenskaya and **M.G. Khoreva** continued research on the Slaty-backed Gulls (*Larus schistisagus*)

of Shelikan Island, Okhotsk Sea, their population regulation, and their impacts on vegetation of the island. See their extended report elsewhere in this issue.

ALASKA

Compiled by **Verena A. Gill**

BEAUFORT AND CHUKCHI SEAS

Betty Anderson of ABR, Inc. completed the 11th year of research on Spectacled and King Eiders (*Somateria fischeri* and *S. spectabilis*) in the Kuparuk Oilfield in Northern Alaska. In addition to aerial and ground-based surveys to determine population trends and nesting success, time-lapse cameras were used to monitor incubating females and record predation events. **Charles (Rick) Johnson**, ABR, Inc., continued his long-term monitoring studies of Spectacled and King Eiders on the North Slope of Alaska, on the Colville River Delta (12 years) and in the National Petroleum Reserve-Alaska (4 years). Study components included aerial surveys for breeding pairs and broods, nest searches, thermistored eggs, and monitoring of nesting success. These studies were supported by ConocoPhillips, Inc.

Bob Ritchie and **Jim King**, ABR, Inc., completed their 5th year of aerial surveys for Steller's (*Polysticta stelleri*) and Spectacled Eiders near Barrow, Alaska. Bob Ritchie also conducted searches for nesting Steller's and Spectacled eiders at several Long Range Radar Sites on the North Slope for the U.S. Air Force.

Bob Day and his colleagues at ABR, Inc. continued the third year of their study evaluating the effectiveness of an anti-collision lighting system for migrating

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eidiers and other seabirds at Northstar Island, near Prudhoe Bay.

At Cape Lisburne, the annual seabird monitoring site in the Chukchi Sea, **Dave Roseneau** and **Jim Schneeweis** of the Alaska Maritime National Wildlife Refuge (AMNWR) evaluated reproductive success and populations trends of Black-legged Kittiwake (*Rissa tridactyla*), Thick-billed Murre (*Uria lomvia*), and Common Murre (*Uria aalge*).

BERING SEA

Mary Cody (U.S. Fish and Wildlife Service [USFWS] Alaska) and **Diane Calamar Okonek** from the Alaska Department of Fish and Game (ADF&G), with assistance from **Joe Meehan** (ADF&G), **Apayo Moore** and **Sawyer Alexie** (both student interns with the Bristol Bay Native Association) monitored Black-legged Kittiwake, Common Murre, and Pelagic Cormorant (*Phalacrocorax pelagicus*) populations and productivity at Round Island within the Walrus Islands State Game Sanctuary.

Rob MacDonald reports that Togiak National Wildlife Refuge (TNWR) staff monitored the population and productivity of Black-legged Kittiwakes, Common Murres, and Pelagic Cormorants at Cape Peirce in 2003. The camp was opened on 30 April, with seabird monitoring occurring from early May to early September. In addition, predation and disturbances to seabirds were recorded and beached bird surveys were performed. Staff at TNWR have monitored the population and breeding performance of kittiwakes, murres and cormorants from shore-based plots at Cape Peirce annually since 1984.

The average number of Black-legged Kittiwake adults and nests on all Cape Peirce plots was low in 2003. The number of kittiwake adults documented was below the 10-year average, while the number of kittiwake nests was within the range recorded during the last 10 years. Overall productivity for Black-legged Kittiwakes was well above the 10-year average and was within the range of val-

ues during that time frame. The average number of Common Murre adults on all plots was low, falling below the range of values observed during the last 10 years. Breeding performance parameters for common murres were also slightly low, with reproductive success within the range of values recorded during the last 10 years. The average number of Pelagic Cormorant adults on all plots was about average and fell within the range of values recorded in the last 10 years. The average number of Pelagic Cormorant nests on all plots was below average, but nest numbers fell within the range of values recorded in the last 10 years. Breeding performance parameters for Pelagic Cormorants matched the 10-year average.

Ed Murphy made 2 trips to Bluff (northern Bering Sea) to monitor adult numbers, breeding chronology, and breeding success of Black-legged Kittiwakes, Common Murres, and Pelagic Cormorants.

Under the guidance of **Dan Roby** (Oregon State University [OSU]) and **Dave Irons** (USFWS Alaska), field work was conducted on St. Lawrence Island, Alaska from 18 Jun through 3 Sep 2003. Participants were **Lisa Sheffield** (OSU), **Victor Zubakin** (Russian Academy of Sciences), **Ian Rose** (OSU), and **Brandon Waghiiyi** and **Tisha Kiyuklook** (students from Savoonga, St. Lawrence Island). St. Lawrence is located in the northern Bering Sea approximately 200 km southwest of Nome, Alaska, and 60 km southeast of the Chukotsk Peninsula, Siberia (ca. 63° 30' N, 170° 30' W). Research was conducted on the north side of St. Lawrence Island, east of the village of Savoonga. Trends in breeding populations of Black-legged Kittiwakes, Common Murres, Thick-billed Murres, Least Auklets (*Aethia pusilla*), and Crested Auklets (*A. cristatella*) were monitored. Breeding chronology and reproductive success of these 5 species were also followed. In addition, the diet composition of Common Murres, Thick-billed Murres, Least Auklets, and Crested Auklets was recorded. Crested and Least auklets were monitored at two colonies,

Kitnik and Myaughee, located approximately 3 km and 10 km east of Savoonga, respectively. Black-legged Kittiwakes, and Common and Thick-billed Murres were monitored at two locations, Kiveepuk and Pinaapuk, approximately 12 km and 20 km west of the village of Savoonga, respectively.

Under **Art Sows**' guidance, seabirds were monitored at St. George Island in the Pribilofs. **Jacqueline McDonough**, **Carol Erwin**, and **Kent Sundseth** recorded timing of nesting events, reproductive success, and prey of Black-legged Kittiwakes, Red-legged Kittiwakes (*Rissa brevirostris*) and Common and Thick-billed Murres. On St. Paul Island in the Pribilofs, **Mike Polito** and **Emily Drew** monitored timing of nesting events, reproductive success, and prey of Black-legged and Red-legged Kittiwakes and Common and Thick-billed Murres.

After a preliminary survey of potential study areas on St. Paul Island, **Anne Harding** established a study area at St. George for survival of Least Auklets; she banded a sample of birds and completed mapping the auklet colony.

A North Pacific Research Council-funded project is looking at stress hormone levels and fatty acids in kittiwakes (*Rissa* spp), auklets (*Aethia* spp), and murres (*Uria* spp) at various sites in the Bering Sea. Principal Investigators are **Alan Springer**, **Alexander Kitaysky**, and **Sarah Iverson**. Samples were collected on St. George by Morgan Benowitz-Federicks and Johanna Klima, and on St. Paul by **Mike Schultz** and **Chris Hovnanian**. (See also the Aleutian Islands report, below.)

Shiway Wang started an MS program in Marine Biology at the University of Alaska Fairbanks (UAF) with **Alan Springer** (UAF) and **Scott Hatch** (U.S. Geological Survey [USGS] Alaska). On two trips to St. George Island, they collected fat samples, stomach oil samples and blood samples from Northern Fulmar (*Fulmarus glacialis*) adults and chicks to look at diets using fatty acid signature analysis. With help from **Dan Mulcahy**, resident veterinar-

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ian at the USGS Alaska Science Center, four fulmars were implanted with satellite transmitters on St. George in June. All patients appear to be doing well 4 months post-surgery.

Art Sows continued to oversee the land-based rat prevention program in the Pribilofs.

Jamie Jahncke's research at the University of California at Irvine focuses on relationships between seabirds, prey, and physical mechanisms responsible for prey availability in coastal marine ecosystems. He studied trends in carbon flux to seabirds in the Peruvian upwelling system, the distribution of foraging shearwaters (*Puffinus* spp.) in the southeastern Bering Sea, and the spatial patterns of seabird distribution in the central and eastern Aleutian Islands. Currently he is finishing data analysis and writing up the last part of his research. He will complete my doctoral thesis by spring 2004 and start a one-year post-doc with **George Hunt**, working on a project that studies the effect of cross-shelf transport and post-bloom new production on the distribution and abundance of planktivorous seabirds near the Pribilof Islands.

ALEUTIAN ISLANDS—SEABIRD MONITORING

Jeff Williams coordinated long-term seabird monitoring at Aiktak, Kasatochi, and Buldir Islands and other studies in the archipelago.

At Aiktak Island in the eastern Aleutians, technicians **Sarah Syria** and **Jon Laslett** monitored timing of nesting events, reproductive success, food habits, and population levels of Glaucous-winged Gulls (*Larus glaucescens*), Black Oystercatchers (*Haematopus bachmani*), Tufted Puffins (*Fratercula cirrhata*), Ancient Murrelets (*Synthliboramphus antiquus*), and Leach's (*Oceanodroma leucorhoa*) and Fork-tailed (*O. furcata*) Storm-Petrels.

There are 3 monitoring sites in the central Aleutians: Kasatochi, Ulak, and Koniuji Islands. On Kasatochi, technicians Dan Barton and **Kirsten Lindquist**

primarily studied Least and Crested Auklet productivity, chick growth, prey preferences, populations, attendance patterns, and adult survival rates. Dan and Kirsten also monitored population levels of Pigeon Guillemots (*Cepphus columba*), Pelagic and Red-faced (*Phalacrocorax urile*) Cormorants, and Leach's and Fork-tailed Storm-Petrels. Nearly 2000 Thick-billed Murres apparently have abandoned Kasatochi, in that they have not attempted to breed on the cliffs now for 5 consecutive years. At nearby Ulak Island, populations and productivity of Fork-tailed Storm-Petrels was monitored, and cormorant and murre population levels were recorded. On Koniuji Island, Black-legged kittiwake populations and productivity and murre populations were monitored. Interestingly, murre numbers have increased at Koniuji recently.

At Buldir Island, the western Aleutians monitoring site, technicians **Nathan Jones** and **Martin Murphy**, and volunteer **Naomi Sugimura** conducted the 16th year of annual seabird monitoring. Species monitored included Thick-billed Murres, Red-legged and Black-legged Kittiwakes, Least, Crested, Whiskered (*Aethia pygmaea*), and Parakeet (*A. psittacula*) Auklets, Pelagic and Red-faced Cormorants, and Leach's and Fork-tailed Storm-Petrels. For most species, timing of nesting events, productivity, prey, and population levels were monitored.

In the Near Islands group (Attu, Agattu, and Semichi Islands), **Vernon Byrd**, **Jeff Williams**, **Anne Morkill**, **Don Dragoo**, **Heather Renner**, and **Jon Laslett** (AMNWR) counted cormorants in July. Only 8,000 cormorants were counted on these islands in 2003, compared to 64,000 in 1979 and 95,000 in 1970 in the same areas. These people also counted murres and kittiwakes in the Near Islands. **Douglas Siegel-Causey** and **Jeremiah Trimble** assisted with the cormorant surveys in the Near Islands and also collected birds for an ongoing study of cormorant systematics. On the same trip, **John Piatt** (USGS Alaska) and **Tony DeGange** (USFWS Alaska) con-

ducted surveys for Kittlitz's (*Brachyramphus brevirostris*) and marbled (*B. marmoratus*) murrelets in the Near Islands.

Assistance with the murrelet counts was given by **Verena Gill**, **John Haddix**, and **Angela Doroff** (USFWS Alaska), whose main project was skiff surveys in the Near Islands for Pigeon Guillemots, Common Eiders (*Somateria mollissima*), Black Oystercatchers, and Northern Sea Otters (*Enhydra lutris kenyoni*). In September Verena, John and Angela did the same in the Rat Islands region of the Aleutians (Amchitka, Kiska, Little Kiska, and Rat), with assistance from **Kim Kloecker** (USGS Alaska) and **Carl Kava** (Alaska Sea Otter and Steller Sea Lion Commission). In August, Jim Estes (USGS California) and Tim Tinker (University of California at Santa Cruz [UCSC]) also conducted skiff surveys for pigeon guillemots, common eiders and sea otters around Adak Island. While sea otter numbers continue to decline dramatically in the western Aleutians (another 63% in the last 3 years), the number of guillemots, oystercatchers and eiders appears to be stable or increasing. The increase can probably be attributed to the removal of exotic foxes from many of the Aleutian Islands by AMNWR.

ALEUTIAN ISLANDS—OTHER RESEARCH

Alan Springer and **Sarah Iverson** collected samples at Kasatochi for the North Pacific Research Council-funded project to look at stress hormone levels and fatty acids in auklets, murres and kittiwakes at various sites. **Hector Douglas** and **Brie Drummond** collected samples at Buldir Island. Principal Investigators for this project are **Alan Springer**, **Alexander Kitaysky**, and **Sarah Iverson**. (See also the Pribilof Islands report, above.)

During early August 2003, a team of 5 seabird scientists and managers embarked on a two-week cruise in the Aleutian Islands to capture Short-tailed Albatrosses (*Phoebastria albatrus*). **Kim Trust** and **Greg Balogh** of USFWS Alaska joined **Rob Suryan** of Oregon State University, **Ed Melvin** of Washing-

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ton State University Sea Grant Program, and **Graham Robertson**, Bird Whisperer of the Australian Antarctic Division, in an effort to capture Short-tailed Albatrosses at sea and attach satellite transmitters to their back feathers. The two-week cruise aboard the F/V *Predator* was more of a two-week drift, with all capture efforts focused on Seguam Pass. At least 17 different Short-tailed Albatrosses were observed on the water near the boat. Several capture methods were attempted; the tossing of a PVC hoop fitted with netting proved to be the capture method of choice. Weather and poor hoop marksmanship prevented the biologists from capturing more birds. Nevertheless, 4 Short-tailed Albatrosses (1 adult, 1 subadult, and 2 juveniles) were captured and fitted with transmitters. Problems with intermittent transmission from one transmitter began almost immediately; the other three transmitters continue to provide good position data.

A project to remove rats from small islands near Adak to restore seabird populations was begun by **Peter Dunlevy, Greg Thomson, Lisa Scharf, Dave Kuhn, and Jeff Wraley** (AMNWR).

Steve Ebbert, Lisa Scharf, Greg Thomson and others (AMNWR) completed removal of introduced arctic foxes (*Alopex lagopus*) from Adak Island. This should restore native bird populations, including seabirds. The same crew continued work on Tanaga Island to rid it of foxes as well.

Ian Jones, Heather Major, and Jacque Marais (Memorial University, Newfoundland) conducted studies of the impacts of rats on Crested and Least Auklets at Kiska.

Jimi Estes (USGS, California), **Don Croll** (UCSC), and others continued a study on the importance of fertilization by seabirds in terrestrial ecosystems in the Aleutians. This work focuses on understanding ecosystem effects of reductions in seabird populations due to predation by introduced mammals.

Debbie Corbett and Dixie West (USFWS Alaska) led archeological stud-

ies at Attu and Rat islands. Part of their goal is to describe native bird faunas of the past, including seabirds, in order to evaluate the effects of introduced foxes and rats on the avifauna.

Don Drago, Heather Renner, Jeff Williams, Brad Benter, Jenny Wetzel, Dan Barton, Kirsten Lindquist (AMNWR) and others conducted the Seabird, Marine Mammal, and Oceanography Coordinated Investigation (SMMOCI) project at Kasatochi. This multi-year project involves transects near seabird colonies where simultaneous nest monitoring is being conducted, in order to evaluate the relationship of seabird foraging and breeding success.

GULF OF ALASKA

There were no funds to conduct monitoring at the designated annual site in the Semidis in 2003; however, **Shiway Wang** (UAF) along with **Scott Hatch** (USGS Alaska) and volunteers **Ellen Naughtner** (U.S. Forest Service, Juneau) and **Mette Nielson** (UAF) ventured out twice to Chowiet Island, Semidi Islands Group. They collected samples of fat, stomach oil, and blood from Northern Fulmar adults and chicks to look at diets using fatty acid signature analysis. Hatch and Shiway also fitted four fulmars with harness-mounted transmitters at the Semidis in August. Those birds also appear to be fine after 2 months. Three were off the Oregon coast and one still remained in the Gulf of Alaska. The plan is to tag a similar number of fulmars in the large colony on Chagulak Island (eastern Aleutians) in 2004.

Greg Siekaniec and Steve Ebbert (AMNWR) continued to work with local cattlemen to try to get cows off Chirikof Island, as part of a program to restore the island for seabirds.

Steve Ebbert coordinated a research project on ground squirrels with Idaho State University, in preparation for removal of these introduced rodents to restore seabirds.

At East Amatuli in the Barren Islands, northern Gulf of Alaska, **Arthur Kettle, Michelle Schuiteman, Kelly Wallis, and Jeremy Mizel** (AMNWR)

monitored reproductive success, prey, and population trends of Fork-tailed Storm-Petrels, Black-legged Kittiwakes, Common and Thick-billed Murres, and Tufted Puffins. Population data also were gathered for Glaucous-winged Gulls.

Leslie Slater (AMNWR) set up plots for Tufted Puffin density monitoring on Chiswell Island.

USFWS has been gathering information on the abundance and distribution of Kittlitz's Murrelets, following its proposal to list the species under the Endangered Species Act (ESA). Boat-based surveys were conducted in several locations for Kittlitz's Murrelets in 2003, including the Alaska Peninsula (see below for details) and Glacier Bay (see the southeast Alaska section for details). In southcoastal Alaska, **Kathy Kuletz, Michelle Kissling, and Steve Brockman** (USFWS Alaska) were joined by **Mary Kralovic** (Glacier Bay National Park) to survey Cross Sound and the outer coast north to Yakutat. The "lost coast" is over 240 km long, is bordered by huge ice fields, and has few safe harbors; consequently it has not been well surveyed for birds. Over 6000 Marbled and 480 Kittlitz's Murrelets were counted. Population estimates will be available in a report, which will combine the 2002 (Yakutat north to Icy Bay) and 2003 surveys of murrelets, as well as data on other seabirds and marine mammals.

Kittlitz's Murrelet surveys also covered the entire south side of the Alaska Peninsula, from Cape Douglas at the east end to Isanotski Strait at the west end. **Tom Van Pelt** (USGS Alaska) and his crew, **Kyle Juk, Jim Saracco, and Michelle Wada**, surveyed both exposed outer coasts and protected bays and fjords aboard a 42-foot fishing boat. The boat's expert captain was **Brad von Wichman**; crew was Alex Davis. This was the second year of funding for Tom Van Pelt and John Piatt (USGS Alaska) under the USGS/USFWS Science Support Program. The project aims to evaluate the population status of Kittlitz's Murrelets in areas where we have little or no information on their population size.

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Research continued on Middleton Island in 2003 under the direction of **Scott Hatch** (USGS Alaska). **Andy Ramey** served as camp leader, supervising the work of five volunteers from hither and yon—**Veronica DeCamp** (Florida), **Cory Gregory** and **Jessen Tompkins** (Michigan), **Jessica Fischer** (New York), and **Megan Parks** (Hawaii). **Naomi Bargmann** (University of Alaska Anchorage) pursued her MS project, collecting egg, blood, and subcutaneous fat samples from adult and nestling kittiwakes for fatty acid signature analysis. **Ted Miller** (Memorial University of Newfoundland) spent 3 weeks chasing snipe and was hooked—he may return for the whole season in 2004. Also visiting in 2003 were the colleagues from the P. & M. Curie University, Paris—**Etienne Danchin**, **Liliana Naves**, **Guillaume Bouteloup**, and **Fabrice Helfenstein**—who initiated some studies of kittiwake behavioral ecology that likely will continue for the next several years. Besides the kittiwakes, the tower colony on Middleton now sports a sizeable number of marked Pelagic Cormorants, some 120 individuals having been captured and banded this past season.

Seabirds were monitored along the Pacific coast of the Becharof National Wildlife Refuge (BNWR) to estimate population size, breeding phenology, and reproductive success during the 2003 breeding season. **Susan Savage** and others conducted the study, which focused on Common and Thick-billed Murres. A small number of Glaucous-winged Gulls also were observed. The objectives of the monitoring program were to detect changes in population size and reproductive performance of these ledge-nesting seabirds for comparison over time and with other colonies in Alaska. This baseline information can be used to detect problems in marine bird populations and to provide a basis for directing management actions and assessing the effects of management. No sea-based population counts were conducted this year (see Kaler et al. 2003, for past survey results). Four land-based censuses were collected for the Puale Bay colony. The mean

population count for the land-based count was 1521.9 ± 181.1 murres. This was slightly lower than last year's mean, but the difference was not statistically significant. We monitored productivity measures on 475 Common Murre nest sites on 17 plots and 25 Thick-billed Murre sites on five plots. In 2003, the mean hatch date for Common Murres was $16 \text{ Aug} \pm 5.7$ days, which was significantly later than the mean hatch date in 2002 of $6 \text{ Aug} \pm 1.6$ days. We believe that early and intensive predation by Common Raven on murre eggs was largely responsible for this year's phenological delay. We documented a fledging success of 0.84 ± 0.02 and a reproductive success of 0.65 ± 0.04 , which were statistically lower than values for 2002. Similar declines in reproductive success were noted for the 25 Thick-billed Murre sites; however, due to the small sample sizes, no conclusion on the differences in phenology or productivity can be drawn. We monitored 31 Glaucous-winged Gull nests. The mean hatch date was $12 \text{ July} \pm 14.2$ days, with productivity of 1.19 ± 1.14 chicks fledged per nest attempt. The traditional cliff sites used by Red-faced Cormorants in 2001 and 2002 were not occupied this year; no cormorants were monitored. In addition to monitoring seabird population and productivity, camp staff also conducted disturbance monitoring, beach watches; recorded daily weather, incidental bird and mammal sightings, bear encounters, plant phenology; and conducted small mammal trapping.

In 2003 BNWR staff also completed the report of 2002 activities: Kaler, R., S. Savage, and A. Leppold, 2003. "Populations and productivity of seabirds on the Pacific Coast of Becharof National Wildlife Refuge, Alaska Peninsula, Alaska, Jun–Sep 2002; US Fish and Wildlife Service, King Salmon, AK. Unpublished, 61pp.

PRINCE WILLIAM SOUND

David Irons (USFWS Alaska), with the aid of **Kelsey Sullivan**, **Aly McKnight** and several others, continued long-term monitoring of Black-legged

Kittiwake populations, productivity, diets, and survival in Prince William Sound (PWS). **Kelsey Sullivan** (An MS student at Rutgers University) and **Aly McKnight** came back for a fourth year to conduct studies at the Shoup Bay kittiwake colony in Prince William Sound. **Kelsey** is looking at the effect of adjacent productivity on the rate of movement of experienced breeders.

Migratory Bird Management, USFWS, conducted Kittlitz's Murrelet studies in College and Harriman fiords in PWS, which are known to contain most of the remaining PWS population of this species. **Kathy Kuletz**, **David Irons**, **Liz Labunski**, **Aly McKnight**, **Kelsey Sullivan**, **Shawn Stephensen**, and **Tamara Mills** participated in two types of boat-based surveys. They repeated the 2001 intensive Kittlitz's surveys in June, July, and August and found that the species is still declining in this Kittlitz's hot spot. A new type of survey was tried to look at temporal variation, using an observer aboard a catamaran tour boat, courtesy of Phillips Tours. The observer joined the cruise approximately every other day over the summer and recorded murrelets using GPS-linked data entry. The technique worked well and provided information on the change in abundance and distribution throughout the summer. The report will compare the results of the tour boat surveys to those of the intensive small-boat surveys, to assess viability and application for future monitoring efforts. Additionally, a pilot behavioral study was conducted to evaluate methods for collecting foraging behavior data on Kittlitz's.

SOUTHEAST ALASKA

Bob Day and his colleagues at ABR, Inc., assisted in finalizing the environmental impact statement for vessel quotas and operating requirements for boats at Glacier Bay National Park and Preserve.

At St. Lazaria Island, the annual monitoring site in the southeastern Gulf of Alaska, **Leslie Slater** (AMNWR), **Ingrid Harrauld**, **Alexis Will**, and **Nikolai Konyukhov** monitored the tim-

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ing of nesting events, reproductive success, prey, and populations of Leach's and Fork-tailed Storm-Petrels, Pelagic Cormorants, Glaucous-winged Gulls, Pigeon Guillemots, Common and Thick-billed Murres, and Rhinoceros Auklets. Konyukhov also conducted a Rhinoceros Auklet colony mapping project at St. Lazaria. A remote camera was set up on St. Lazaria to transmit live images of the murre colony to a major visitor contact point in Sitka.

Personnel from the Alaska Science Center (USGS/BRD) and Glacier Bay National Park teamed up for a biannual boat-based survey of marine predators within Glacier Bay. The bay was surveyed in March and again in June of 2003. This was the fifth year in a row that the joint agency survey has been conducted. All vertebrate predators are noted during transects, but marine birds, particularly seabirds and waterfowl, comprised the bulk of all animals observed. If funding is available, a synopsis of all five years of this survey will be completed in 2004. Personnel who contributed to the survey this year include **Jim Bodkin, Marc Romano, George Esslinger, Jennifer Wetzel, Dan Monson, Brenda Ballachey, Heather Colletti, Jim De la Bruere, Alison Agness, and Aileen Miller** of USGS, and **Justin Smith, Mary Kralovec, and Jim Sarracco** of the National Park Service.

The USGS/BRD Alaska Science Center began a three-year study of Kittlitz's Murrelets in Glacier Bay National Park during the summer of 2003. Boat-based surveys were conducted from June to August within Glacier Bay to determine the bay-wide distribution of Kittlitz's and Marbled Murrelets. Land-based observations of Kittlitz's Murrelets were conducted to characterize feeding behavior in relation to vessel traffic. **John Piatt** is the Chief Scientist of the project and **Marc Romano** is serving as the Project Leader. **Gary Drew** is helping with study design and analysis of survey data. The field crew included **Mayumi Arimitsu, Alison Agness, Aileen Miller, Jennifer Wetzel,**

Michael Larson, and **Gavin McMorrow.**

BACK AT THE OFFICE

Alexanader Kitaysky recently moved to the University of Alaska, Fairbanks, to join the faculty at the Institute of Arctic Biology.

Bob Day and his colleagues at ABR, Inc., continued data analysis and preparation of scientific papers related to the effects of the *Exxon Valdez* oil spill on marine-oriented birds.

Ann Harding (Alaska Pacific University, in collaboration with USGS Alaska) continued follow-up from summer 2002 fieldwork on Dovekies (Little Auks; *Alle alle*) in Spitsbergen, together with **Tom Van Pelt**. Ann finished a paper on Dovekie parental roles, and is working on a paper looking at Dovekie adult and chick diets together with Tom Van Pelt and **Keith Hobson**. Ann continued work on colony attendance and population monitoring of Horned Puffins (*Fratercula corniculata*), and she wrapped up work on a six-year analysis of the breeding biology of Horned Puffins at a colony in Cook Inlet.

In August, **Tom Van Pelt** started a new job with the Migratory Bird Management branch of the Alaska Region USFWS, focusing on international and circumpolar conservation issues relating to non-game migratory birds (marine and terrestrial). Prior to this, Tom's work with Alaska Science Center (USGS) during 2002–2003 was chiefly focused on Kittlitz's Murrelet conservation questions. Van Pelt authored a report from results of 2002 fieldwork on Kittlitz's Murrelet population size and trend along the Kenai Peninsula. Van Pelt helped John Piatt bring together an informal Kittlitz's Murrelet working group, aimed at improving communication and collaboration, and Van Pelt is working on a Kittlitz's Murrelet website. Also under the Science Support Program, John and Tom planned work to evaluate the current status of Kittlitz's Murrelets at Attu Island, where a 20-year historical record of Kittlitz's Murrelet abundance exists based on counts by private birding tour-

ists (for more information on this see the Aleutian Islands section).

Verena Gill, Richard Lanctot (USFWS) and **Lee Tibbetts** (USGS-BRD) joined an expedition to French Polynesia in March (see Hawaii and Pacific report).

Dave Roseneau (AMNWR) coordinated collection of 186 seabird eggs for the contaminants program of the long-term Seabird Tissue Archival and Monitoring Project (STAMP). He acquired 52 Common Murre eggs from Bluff and East Amatuli, Middleton, and St. Lazaria islands, 30 Thick-billed Murre eggs from St. Lawrence and Buldir islands, and 104 Black-legged Kittiwake eggs from St. George, Buldir, Kodiak, and Middleton islands, and Shoup Bay. Besides long-term archiving, the project strives to determine current baseline levels of persistent organic pollutants—e.g., polychlorinated biphenyls (PCBs), chlorinated pesticides, dioxins, and mercury.

Art Sowls and **Peter Dunlevy** (AMNWR) continued to coordinate a shipwreck response strike force. This project will deploy teams to islands following shipwrecks with rodenticides and other tools, to preclude rats from escaping from the wrecks and establishing themselves on the islands ("rat spills"). Islands that are currently rat-free may thus be saved from this invasive and destructive rodent.

The Alaska Sea Otter and Steller Sea Lion Commission (TASSC), a non-profit Tribal consortium, received grants from the Environmental Protection Agency (EPA) to test their subsistence foods for high-priority contaminants. **Lianna Jack** and **Dan Martinez** of TASSC coordinated the project, and **Donna Willoya** of TASSC provided support throughout the project. Field coordinators from 5 tribes along the Alaskan coastline collected 75 gull eggs for contaminant analysis. 15 eggs from Glaucous-winged Gulls were collected at Egg Island at the mouth of the Noatak River, 15 from Glaucous Gulls (*L. hyperboreus*) on Triangle Islands near Nunivak Island, 15 from Herring gulls (*L. argentatus*) on Hog Island near Unalaska and 15 from the Gull Ship

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near Togiak, and 15 Glaucous Gull eggs on Vitskari and Viesokoi Rocks near Sitka. The eggs were tested for Level 1 PBT contaminants, which included pesticides, PCBs, dioxins, furans, and heavy metals. The contaminant results were evaluated for human health risks utilizing the Minimum Risk Level (MRL) screening tool of the Agency of Toxic Substances and Disease Registry's (ATSDR) and the EPA's Estimated Lifetime Cancer Risk assessment tool. The results of this project are documented in Jack and Martinez's final report to EPA, "Design and Field Test a Prototype for a PBT Screening Tool for a Selected Alaska Tribal Subsistence Food" (2003).

Falk Huettmann has now moved from his position as a Killam Postdoc with the Geography Department, University of Calgary, Canada, to a tenure-track position as an Assistant Professor of Wildlife Ecology at the University of Alaska, Fairbanks, Alaska. He is now in the process of setting up a research program and laboratory for spatial data analysis. He will use GIS, remote sensing, and various modelling techniques to investigate questions in wildlife, terrestrial, and marine ecology. Before his move, Falk studied last August on the Kurile Islands, Russian Far East, where he is still puzzled about his documented Japanese Murrelet (*Synthliboramphus wumizusume*) sightings and other fascinating species and research topics. Currently, he is pursuing Pacific-wide research approaches and future habitat scenario modelling for seabirds.

If you would like to contact Huettman with research ideas, projects, etc., his new address is: Falk Huettmann, PhD, Assistant Professor, Department of Biology and Wildlife, Institute of Arctic Biology, University of Alaska–Fairbanks, Fairbanks, AK 99775-7000, USA; phone (907) 474-7671; e-mail ffh@uaf.edu.

ALASKAN SEABIRD-FISHERY INTERACTIONS

The second year of the planned two-year study by National Oceanographic and Atmospheric Administration

(NOAA)-Fisheries to monitor bycatch in the Kodiak Island set-gillnet fishery was postponed due to lack of funding and changes in staff. USFWS participated in this study previously, to collect related data on seabird abundance and behavior. NOAA anticipates completing the study in the 2004 season, which may delay the scheduled bycatch studies for gillnet fisheries in other areas of Alaska. **Bryan Manly** (WEST, Inc.) anticipates completing the annual report from the 2002 season in November 2003, with input from the USFWS (**Kathy Kuletz**) on seabird issues.

Shannon Fitzgerald (NOAA), **Kathy Kuletz** (USFWS Alaska), and **Kim Rivera** (NOAA) updated the seabird section of the annual offshore fishery management document. This is the Ecosystem Considerations chapter of the Stock Assessment and Fishery Evaluation (SAFE) Report for the Groundfish Fisheries of Alaska. As with last year's report, it will be available by the end of the year via the NOAA-Fisheries web site: <http://www.fakr.noaa.gov/npfmc/safes/2002/ecochap.pdf>. Kathy will continue to represent seabird interests on the fisheries Plan Team, which advises the North Pacific Fisheries Management Council.

Kathy Kuletz and **Liz Labunski** (USFWS Alaska) completed a guide and summary report on the Seabird Observer Notes (SON) database. The database consolidates observations of marine birds made by NOAA-Fisheries observers, who monitor commercial offshore fisheries in the Bering Sea and Gulf of Alaska. These records provide accounts of interactions between fishing vessels and seabirds and sighting records, including many observations during winter months). The database currently has 3033 records dating from 1993 to 2001. It contains up to 42 fields per record, such as date, location, and gear type, which will assist in querying the database. New records will be added on a biannual basis. Currently, the database includes 113 species or species groups, with emphasis on those of special interest such as albatrosses and kittiwakes. The majority

of the records fall into 4 of the possible 16 interaction categories: seabird sightings (1103), discard feeding (485), gear interactions (426), and birds landing on the boat (397). USFWS and NOAA-Fisheries also developed new data sheets for fishery observers, which should improve the quality and accessibility of the information.

Kim Dietrich (kdiet@u.washington.edu) is characterizing seabird bycatch rates in Alaska longline fisheries. The research is her MS thesis work under **Julia Parrish** (University of Washington) and **Ed Melvin** (Washington Sea Grant Program [WSGP]). She is modeling bycatch rates as a function of temporal, spatial, environmental, ecological, and fisheries factors in order to explain the variation in bycatch rates. She also continues to work with **Shannon Fitzgerald** (Alaska Fisheries Science Center, National Atmospheric and Oceanographic Administration [NOAA-F]) to identify individual longline vessels for outreach activities that will be performed by NOAA-F staff.

Ed Melvin (emelvin@u.washington.edu) and Kim Dietrich are collaborating with **Tracee Geernaert** and **Kelly Van Wormer** (International Pacific Halibut Commission [IPHC]) to summarize seabird abundance data collected during the 2002 longline surveys by the IPHC for halibut (*Hippoglossus stenolepis*), NOAA-F for sablefish (*Anoplopoma fimbria*), and Alaska Department of Fish and Game for sablefish. The data will be used to evaluate whether the seabirds that are likely to be caught by longlines are present in certain management areas, which are currently operating with reduced performance standards for seabird mitigation.

A congressional add-on grant of \$575,000 was received by USFWS to assist in reducing seabird bycatch. The Alaska Fish and Wildlife Field Office and the Migratory Bird Management Program in Anchorage were involved in the distribution of the funds. As a result, the Service's Cooperative Grants and Agreements with several entities have been modified and extended.

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The Alaska Marine Advisory Program received funding to help the owners and operators of small longline vessels develop innovative ways to minimize their seabird bycatch problems. We want to encourage individual fishermen to build and test a unique seabird deterrent devices. By offering small research and development grants, we will be tapping into the collective knowledge base of the entire small vessel fleet.

NOAA Fisheries recently received funds to quantify the rate of interaction between seabirds and the trawl net sonde cable ("third wire"). The sonde cable is hard to see, being 1–2 cm thick, usually dark in color, and unmarked; it enters the water several 10s of meters astern of the trawler. Birds are at risk from this cable in several ways. When birds are on the surface, as when they are feeding in the offal discharge from the ship, the cable may sneak up on them; hydrostatic pressure then pins the bird to the cable and forces it underwater. Alternately, birds that are flying and are focused on looking for food (such as offal from the ship) and may collide with the wire, sometimes injuring or breaking a wing in the process. Fishery observers do not have time to watch for these interactions, as they have their hands full with monitoring catch and bycatch in the trawl net. The new project seeks to quantify the interaction rate between third wires and seabirds, either by placing additional observers on the vessel or by monitoring the trawl third wire with video cameras.

The Marine Conservation Alliance received money to encourage trawl fishermen to solve the trawl net sonde problem prior to extensive efforts to measure its magnitude. The MCA will provide incentives to trawl fishermen to develop and test novel devices or techniques that eliminate the take of seabirds by trawl third wires. The approach of this project is: "If we can solve the problem more cheaply than we can measure the problem, then it makes sense to just solve it." Industry and management agencies would then select the best solutions for quantitative testing in subsequent years.

For the past three years, USFWS has been working cooperatively with Japan's Ministry of the Environment to capture Short-tailed Albatrosses on their breeding grounds and attach satellite transmitters to their back feathers. In so doing, we have been gathering invaluable information regarding where this endangered species spends its time, and with which fisheries it is most likely to interact. As our sample size increases, we may gain insights into sex and age-specific movement patterns, how birds interact with weather systems, and where and when they are most vulnerable to seabird bycatch. This project receives support from a number of sources, including the congressional add-on.

For the past 4 years, USFWS has made streamer lines available at no cost to longline fishermen throughout Alaska. These streamers are deployed next to longline fishing gear to deter seabirds from getting caught in the fish hooks. To date, over 1300 lines have been distributed. While a considerable inventory of the lines also remains available, it is impossible to anticipate how much of a spike in demand we will see when the regulations requiring the use of streamer lines goes into effect. This additional money will allow us to continue the streamer line giveaway until after the new regulations are implemented; hopefully we can ensure that demand does not outstrip supply.

The University of Washington Sea Grant Program (WSG) entered into a cooperative research agreement with the Service to further evaluate an integrated weight longline mainline (IW line). This proposed mechanism would cause longline gear to sink faster, thereby reducing the time during which baited hooks are available to seabirds. Increasing the sink rate of gear has been shown to reduce seabird bycatch rate. Questions that remain about IW lines include: (1) the optimum amount of weight to integrate into the IW line for fishing under Alaskan conditions; (2) the effect of using IW line on the catch rate of target fish species; and (3) the long-term durability of IW line.

USFWS is in the process of entering the records on seabirds provided by NOAA-Fisheries observers into a database. Although data on seabird bycatch in fishing gear are entered into a database each year (and have been analyzed), records of incidental observations such as the Seabird Daily Notes have never been collected in a database. These records would be useful for answering a variety of questions on the interaction between any species of bird and any aspect of the fishery. However, there has been no practical way to use the records, so managers have forced to make decisions without most of the information. The database is designed to be queried easily. Managers will now be able to make much more informed decisions regarding the interactions of seabirds and offshore fisheries.

USFWS has funded the distribution of beached-bird guides to NOAA fishery observers. This guide has markedly improved the ability of observers to identify birds that come up dead and be-dragged on longlines. In addition, USFWS funded the preparation of bird study skins for use at the Seattle-based observer training center.

CANADA

Compiled by **Louise Blight**

Ken Morgan (Canadian Wildlife Service [CWS]), Sidney, British Columbia [BC]), with the assistance of **Mike Bentley** and **Bridget Watts**, continues to study the at-sea distribution of seabirds. Using ships of opportunity to collect data on seabirds (and marine mammals), Morgan is collaborating with **Bill Sydeman** and **Peggy Yen** (PRBO Conservation Science [PRBO]) and **David Hyrenbach** (Duke University Marine Lab) in a joint project to identify areas of high biological importance within the California Current System.

Morgan, Sydeman, Yen and Hyrenbach also continue to collaborate with **Sonia Batten** (Sir Alister Hardy Foundation for Ocean Science), **David**

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Welch (Canadian Department of Fisheries and Oceans [DFO]) and **Mike Henry** (University of BC) on the Continuous Plankton Recorder project. The project involves collecting plankton samples and concurrent observations of birds and mammals along a 6500-km transect from the coast of British Columbia, through the southern Bering Sea, to the coast of Japan.

Morgan also continues to work on issues pertaining to oil pollution. He is working with postdoc **Patrick O'Hara** (University of Victoria [UVic]) on assessing the level of and the spatial/temporal variability in fouling of seabirds from chronic oil pollution. As part of this work, Morgan and O'Hara are taking part in a national project—the Integrated Satellite Targeting of Polluters (I-STOP)—which makes use of a satellite (RadarSat) to identify illegal offshore discharges of oil from vessels. O'Hara is the local lead on the I-STOP project. And lastly, Morgan continues to work on assessing the extent of seabird bycatch in Canada's west coast commercial fisheries.

Joanna Smith (Birdsmith Ecological Research) is working on her PhD at University of Washington (UW) with **Julia Parrish** [see Oregon-Washington report]. Jo also continued her work with Laskeek Bay Conservation Society (www.laskeekbay.org) and wrote several articles for their annual scientific report. Jo collaborated with **David Hyrenbach** (Duke University) to complete the analysis of the seabird data she collected during her offshore voyage from the Galapagos Islands to Victoria, BC in 1999. In early 2004, Smith will travel to the Juan Fernandez Islands (Chile) with **Peter Hodum** (California State University at Long Beach) and **Michelle Wainstein** (UW) to examine the at-sea distribution and foraging ecology of the Juan Fernandez and Stejneger's Petrels (*Pterodroma externa* and *P. longirostris*) that breed on Alejandro Selkirk Island.

Smith also worked with **Francis Weise** (UW) to assess the effects of the halibut and rockfish (*Hippoglossus stenolepis* and *Sebastes* spp.) commercial longline fishing on Black-footed

Albatross (*Phoebastria nigripes*) in the Canadian Pacific. Demographic data were used to build a model and quantify the mortality from three fishing seasons (2000-2002) in British Columbia. As well, a spatial/temporal analysis was done to examine overlap between the fisheries and the Black-footed Albatross and from the available fisheries data. The results were used by the Canadian National Plan of Action Working Group to assess the effects of longline fisheries in the Pacific.

Gail Davoren began as an Assistant Professor at the University of Manitoba in September 2003. She continues to investigate seabird-fish interactions on the northeast coast of Newfoundland, in collaboration with **Bill Montevecchi** (Memorial University of Newfoundland), by integrating colony-based and ship-based research. Other important collaborators are DFO and **Stefan Garthe** (Marine Institute, University of Keil). Past research revealed persistent aggregations of capelin (*Mallotus villosus*), the primary fish prey of vertebrate predators in the Northwest Atlantic, within foraging ranges of the Funk Island Seabird Colony. Seabird and whales regularly fed in these areas, resulting the formation of biological "hotspots." Recently, hotspots were found to represent previously undocumented off-beach spawning sites of capelin. In Newfoundland, capelin are considered to spawn on beaches, where as off-beach spawning is the typical reproductive mode for capelin elsewhere. It also was found that capelin return to spawn at the same sites among years. The habitual use of these sites as spawning areas by capelin among years appears to allow seabirds and whales to build a memory of traditional foraging sites over a lifetime and across generations. Overall, this information is crucial for future stock assessments of this keystone forage fish species as well as the understanding of predator-prey interactions in the Northwest Atlantic ecosystem. Future research will continue to investigate seabird-fish interactions in Newfoundland and research activities are also being initiated in Canada's Arctic (Hudson Bay,

Lancaster Sound). Davoren is currently looking for graduate students with similar interests.

Catherine Soos is completing analysis of her three-year study of the interaction of several parameters of breeding biology in Franklin's Gulls (*Larus pipixcan*) with multi-species outbreaks of Type C Botulism in prairie wetlands. **Ted Leighton** (Canadian Cooperative Wildlife Health Centre, Western College of Veterinary Medicine, University of Saskatchewan) and **Dan Frandsen** (Parks Canada) completed year 10 of a long-term study to monitor epidemic disease occurrences at two colony sites of Double-crested Cormorant (*Phalacrocorax auritus*) in the southern boreal forest of Saskatchewan. Highly pathogenic Newcastle Disease occurred on multiple southern boreal colony sites in Alberta and Saskatchewan in July-August 2003. There has been a regular pattern of detection of this virus in alternate years on the most intensively monitored site at Doré Lake, Saskatchewan.

Mark Hipfner of CWS reports that the past summer (2003) marked the 10th year of operation of the Centre for Wildlife Ecology's seabird research and monitoring program on Triangle Island, BC. They monitored breeding chronology and success, relaying rates and consequences, chick diets and growth, and trophic status of adult birds in Cassin's Auklets (*Ptychoramphus aleuticus*) and Rhinoceros Auklets (*Cerorhinca monocerata*). In addition, they monitored various aspects of the breeding ecology of Tufted Puffins (*Fratercula cirrhata*), Common Murres (*Uria aalge*), Pelagic Cormorants (*Phalacrocorax pelagicus*), Glaucous-winged Gulls (*Larus glaucescens*) and Leach's Storm-Petrels (*Oceanodroma leucorhoa*). Hipfner and **Laura MacFarlane-Tranquilla** led a top-notch field crew consisting of **Kristin Charleton**, **Raphael Lavoie**, **Laurie Savard**, **Glen Keddie**, and **Valerie Labrecque** in this work. Ocean temperatures were on the warm side in spring 2003, and not surprisingly, most species fared poorly as a result; only Common Murres had a successful sea-

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son. In addition to the core program, we also had two Simon Fraser University (SFU) graduate students, one SFU postdoc, and one Diplom candidate from the University of Heidelberg conducting research at Triangle Island. **Gwylim Blackburn** completed field work for his MSc investigating sexual selection and parental investment decisions in Tufted Puffins; **BriAnne Addison** completed a first season of experimental work investigating effects of parental condition on breeding success of Rhinoceros Auklets. **Jim Dale** photographed Common Murre eggs to test a theoretical model—his own—that predicts characteristics of individual recognition signals, and **Karen Zimmerman** carried out a study of incubation length and eggshell characteristics in several species of alcids.

In addition to the work on Triangle, **Moira Lemon** (CWS) visited two islands in Haida Gwaii (Queen Charlotte Islands), George and East Copper, to re-survey permanent plots for Ancient Murrelets (*Synthliboramphus antiquus*) and Cassin's Auklets as part of the CWS Pacific and Yukon Region's seabird monitoring program. She was joined in this work by Labrecque and **Jason Shafto**. Preliminary results of this exercise indicate that Ancient Murrelet numbers have remained relatively stable over the past 7 years, after a decade of rapid expansion, while Cassin's Auklets have declined a bit, apparently due to loss of habitat from blowdown and regeneration of young spruce trees on several plots.

Alan Burger (UVic) is continuing research on the distribution and habitat use by Marbled Murrelets (*Brachyramphus marmoratus*) at sea and inland on southwest Vancouver Island. In 2003 the field work focused on sampling a wider range of watersheds in this area using radar to count the murrelets. Cathy Conroy and Jenna Cragg did most of the field work. Jenna achieved the unenviable distinction of having a cougar (*Felis concolor*) interrupt an audiovisual survey by appearing out of the bushes less than 3 m away. Burger is also collaborating with many other radar investigators in BC to do a province-wide

analysis of murrelet densities and habitat associations covering 95 watersheds sampled with radar. In collaboration with **Stewart Guy** and **Louise Blight** (BC Ministry of Water, Land and Air Protection [MWLAP]) and others, Burger has also worked on developing standardized methods for assessing potential nesting habitat of murrelets using low-level helicopter flights. Tests have been done with many collaborators in a wide range of habitats on the Sunshine Coast, Clayoquot Sound, Haida Gwaii, and the central mainland coast. A manual for helicopter assessments has been drafted and is presently being refined and edited by MWLAP. Burger is also collaborating with **Louise Waterhouse** (BC Ministry of Forests) and **David (Dov) Lank** (SFU) in testing the helicopter assessment methods at actual nest sites discovered over the past years by the SFU telemetry project. **Rob Ronconi** started graduate studies with Burger at UVic in September 2003, and will be working on spatial distributions of Marbled Murrelets, linking at-sea and inland data. Burger is also still analyzing data from vessel surveys made over the shelf and nearshore waters off Vancouver Island. These analyses cover all seabird species, but focus on Marbled Murrelets and other alcids.

Louise Blight (MWLAP) continues working on Marbled Murrelet recovery initiatives. These include collaborations with Alan Burger (UVic) on developing, testing and refining a manual on standards for aerial surveys (air photo interpretation and helicopter assessments) of Marbled Murrelet habitat. Also, with **Jamie Duncan** and **Simon Norris** of the BC Ministry of Sustainable Resource Management, she is developing GIS-based habitat models for murrelets in coastal British Columbia. Preliminary field trials of this model were conducted via helicopter with Burger and **Jared Hobbs** (MWLAP). With other members of the Canadian Marbled Murrelet Recovery Team, including Chair **Doug Bertram**, Blight has been finalising the Identified Wildlife Marbled Murrelet

account, a provincial conservation and management strategy.

Blight is spending the northern winter (austral summer) on Ross Island, Antarctica, working with **David Ainley** (H.T. Harvey and Associates), **Grant Ballard** (PRBO) and others on a long-term study evaluating the population dynamics of Adélie Penguins (*Pygoscelis adeliae*) in the Ross Sea.

Falk Huettmann has moved from his position as a Killam Postdoc with the Geography Department, University of Calgary, Canada, to a tenure-track position as an Assistant Professor of Wildlife Ecology at the University of Alaska, Fairbanks, Alaska. [See the Alaska and Russia reports for his activities and contact information there.] Falk participated this year with his GIS modeling work in a modeling workshop of the National Center for Ecological Synthesis and Analysis, held in St. Barbara, California. Together with his student **Vera Riefenstein** he looked into GIS modeling of publicly available sighting records of the Short-tailed Albatross (*Phoebastria albatrus*). Other projects he worked on deal with GIS modeling of waterbirds from opportunistic "presence-only" sightings at the Great Slave Lake, Canada (German MSc student **Yana Fenske**), Marbled Murrelet habitat descriptions using remote-sensing imagery (MGIS project **Scott Steeby** and Prof. **Mryka Hall-Beyer**), Marbled Murrelet nest spacing, and various other projects. Currently, he is pursuing Pacific-wide research approaches and future habitat scenario modeling for seabirds.

Tony Gaston and **Grant Gilchrist** continued studies of Thick-billed Murre (*Uria lomvia*), Northern Fulmar (*Fulmarus glacialis*) and Black-legged Kittiwake (*Rissa tridactyla*) reproduction at Prince Leopold Island, Nunavut in 2003. This was a comparatively early year, with open water near the colony from late May. However, reproduction of murre and fulmars was hit by blizzards in August, and overall production was poor. The 5-yearly collections of murre, kittiwake, fulmar and Glaucous Gull (*Larus hyperboreus*) eggs were taken for

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analysis by **Birgit Braune**. In addition, associated studies of Northern Fulmar incubation behavior were made by **Kieran O'Donovan** for **Mark Mallory**. In general, it was a rather inclement year, posing problems for birds and researchers alike.

At Coats Island, Nunavut, Tony Gaston led a team carrying out the normal annual monitoring and banding of Thick-billed Murres (year 20 of this banding project). **Shoshanah Jacobs** collected blood samples for studies of changes in lipid components of blood as indicators of diet and stress. **Uli Steiner** carried out some egg-switch experiments, which failed when most of the resulting chicks were eaten by a Polar Bear (*Ursus maritimus*). Bear problems apart, this was mainly a successful season at Coats Island.

The Laskeek Bay Conservation Society continued banding and monitoring of Ancient Murrelets and Black Oystercatchers (*Haematopus bachmani*) in Haida Gwaii (year 14 of this study). Numbers of Ancient Murrelets continue to be stable at East Limestone Island, but adult recruitment appears to have been low for the past 3 years and we are investigating possible causes. A thirteen year-old Ancient Murrelet recapture this year is the oldest of known age to date.

Bob Milko (CWS) reports that *Wings Over Water: Canada's Waterbird Conservation Plan* was published in April 2003. It can be viewed electronically at http://www.cws-scf.ec.gc.ca/birds/wb_om_e.cfm. Although co-authored by Bob, this is "a conservation plan developed through partnership."

WASHINGTON AND OREGON

Compiled by **Katie O'Reilly**

MONITORING

In June, **David Pitkin** and **Roy Lowe** (U.S. Fish and Wildlife Service [USFWS], Oregon Coast National Wildlife Refuge Complex) conducted the annual coast-wide aerial photo survey of

seabird colonies. The survey covered all colonies of Common Murre (*Uria aalge*), Brandt's Cormorant (*Phalacrocorax penicillatus*), and Double-crested Cormorant (*P. auritus*) along the Oregon coast. Using projected photos, **David Pitkin** and **Matt Wells** censused all Brandt's and Double-crested Cormorants along the Oregon coast as part of the 2003 coordinated Brandt's and Double-crested Cormorant census for California, Oregon and Washington. From late June through late July, Pitkin and Wells also censused all Pelagic Cormorants (*P. pelagicus*) along the Oregon coast by boat, and ground-truthed several mixed Brandt's and Double-crested Cormorant colonies that had been photographed in June. Included in this effort was a large mixed cormorant colony at Cape Disappointment near the mouth of the Columbia River. In all, over 390 cormorant colonies were censused in 2003, making this the third time that cormorants have been censused along the Oregon coast (the other years were 1979 and 1988). Brandt's, Double-crested and Pelagic cormorant numbers were down slightly from 1988 totals, but were all higher than 1979 totals. Importantly, a colony of over 10,000 pairs of Double-crested Cormorants has developed on East Sand Island near the mouth of the Columbia River since the 1979 and 1988 surveys.

Early in the year it appeared that weak to moderate El Niño/Southern Oscillation (ENSO) conditions might develop in Oregon waters. Positive sea-surface temperature (SST) anomalies continued in nearshore waters through May, but by June a negative SST anomaly had developed along nearshore Oregon waters in conjunction with increased upwelling. The negative SST anomaly continued through late July, followed by normal SST conditions in August, and a stronger negative SST anomaly in September. Bait fish appeared to be very abundant on the central and northern coast from June through September.

Pelagic Cormorant breeding phenology appeared to be later and longer this year. A few large chicks were observed during boat surveys in July, but no small

chicks were seen. Many adults appeared to be incubating in mid- to late July. During an aerial survey in late September, Pelagic Cormorants were observed attending nests at two south coast colonies.

Murre attendance at colonies throughout the coast appeared to be normal during the aerial photo survey in early June. However, murre numbers appeared to have declined, in some instances dramatically, at many south coast colonies by late June, possibly due to the reported failure of euphausiids in Oregon waters this year. South coast murre colonies in particular seem to be very dependent on euphausiids for breeding success, and it was noted during the aerial photo survey that guano in south-coast murre colonies had very little pink staining. A pink tinge is typical of guano from a euphausiid diet. Very few murre adult/chick pairs were observed at sea on the south and central coastal areas during boat survey work from late June to late July, and none were observed on the north coast during boat surveys in mid-July. Murre breeding phenology seemed to be later than usual this year on the north and central coast, as reports and observations of adult/chick pairs became more numerous in August.

Murre attendance and productivity at many north coast colonies has been reduced in recent years from increasing harassment by Bald Eagles (*Haliaeetus leucocephalus*) during the breeding season, a pattern which continued to hold true in 2003. Bald eagle productivity on the north and central coast remains high.

In September, **David Pitkin** and **Ray Bentley** (USFWS) conducted the annual coastwide aerial survey of California Brown Pelicans (*Pelecanus occidentalis*) from the mouth of the Smith River, northern California, to Point Grenville, Washington. Pelican numbers were the highest ever recorded from the Smith River to Brookings, but were very low from Brookings to Tillamook County. Large numbers of pelicans were observed on East Sand Island and Grays Harbor, but few were seen in Willapa Bay because roosting habitat had been lost to

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erosion. Overall, the survey total was the second highest recorded.

OTHER NEWS

Joanna Smith is working on her PhD at University of Washington with Julia Parrish. She is examining the foraging ecology and habitat use of common mergansers (*Mergus merganser*) in the mid-Columbia River. Smith is part of a large team that is evaluating avian predation on juvenile salmon (*Oncorhynchus* spp.) within a hydroelectric project. [See also separate reports by Roby et al. on Columbia River studies.]

Preparation of an environmental assessment for the control of mammalian predators on breeding seabirds in Oregon is underway. In 2001 and 2002, red foxes (*Vulpes vulpes*) were seen in and around seabird colonies at Coquille Point in Bandon, Oregon, where they caused nesting failure for all cormorants, gulls, and burrow nesters in the colonies. The document, "Predator Damage Management to Protect Seabird Colonies on Oregon Islands National Wildlife Refuge, Three Arch Rocks National Wildlife Refuge, and adjacent Mainland Areas" is being prepared by **Dylan Little** of Animal and Plant Health Inspection Service, Wildlife Services, U.S. Department of Agriculture. Oregon Coast National Wildlife Refuge Complex South Coast Refuge Manager **David Ledig** is coordinating with Little on preparation of the document.

Nathalie Hamel started a PhD in fall 2003 at the School of Aquatic and Fisheries Sciences at the University of Washington. Her dissertation research focuses on developing an index of bycatch risk of Common Murres (*Uria aalge*) based on their spatiotemporal overlap with commercial gillnet fisheries in Washington and British Columbia. The results will be used to estimate the effect of bycatch mortality on the Tatoosh Island murre population. During summer, Nathalie co-taught a university field course, Biology of Marine Birds, at Bamfield Marine Station with **Alan Burger** (University of Victoria) and **Pe-**

ter Hodum (California State University at Long Beach).

Ed Melvin (emelvin@u.washington.edu) has been on sabbatical in Tasmania, where he has been working on seabird bycatch issues with the Australian Antarctic Division. While down under, he has continued to analyze pilot study data on the sink rates of longline gear. In 2004 he will initiate a larger project to test the effectiveness of integrated weight longline gear on reducing seabird bycatch, with the simultaneous goal of not affecting the catch rates for fish. [For Ed's work in Alaska, see that report.]

[*Editor's note:* Information on Marbled Murrelet work during 2003 in Washington and Oregon was not received, due to a series of oversights. Apologies to anyone affected! Biologists: please confirm that your information has been received by your regional representative; it will be included in the next issue of Pacific Seabirds.]

NORTHERN CALIFORNIA

Compiled by **Meredith L. Elliott**

MARBLED MURRELETS

Richard Golightly and **Percy Hébert** (Humboldt State University [HSU]), and **Bill Boarman** (U.S. Geological Survey [USGS]—San Diego), completed the third year of a study to determine the effects of noise and human disturbance on Marbled Murrelet (*Brachyramphus marmoratus*) adults and chicks in Redwood National and State Parks. **Brian Acord** (HSU) is researching temporal differences in movement patterns between breeding and non-breeding Marbled Murrelets for his Master's thesis. The study will also provide information about at-sea distribution, nesting behavior, and nest-site characteristics. Cooperators on this project include **Howard Sakai** (Redwood National Park), the Bureau of Land Management, USFWS, California Department of Fish and Game (CDFG), California Department of Parks and Recre-

ation, and the California Department of Transportation.

David Bigger (Sustainable Ecosystems Institute [SEI]), **Steven Courtney** (SEI), and **Sal Chinnici** (Pacific Lumber Company [PALCO]) continue to conduct monitoring and research studies on Marbled Murrelets in Humboldt County, northern California. These studies are part of the PALCO Habitat Conservation Plan, and follow the recommendations made by the Marbled Murrelet Scientific Review Panel. The overall goal of the monitoring surveys is to determine whether the Marbled Murrelet Conservation Areas (MMCA), which are on PALCO-owned land, continue to be used by murrelets. In addition, the reserves (Headwaters Forest Reserve and Humboldt Redwoods State Park) are monitored for comparative purposes, essentially as controls. This was the fourth year of Marbled Murrelet audiovisual surveys (44 stations) and radar surveys (13 sites) in MMCA and reserves. Protocols for using radar to monitor breeding murrelets flying to and from old growth forests were also developed. More radar sites were added to monitor forests that are occupied by murrelets, to improve understanding of the distribution and abundance of the local breeding population. Preliminary findings indicate that Marbled Murrelets continue to occupy the MMCA and reserves (as in previous years), and more murrelets were detected over reserves than over MMCA (also as in previous years). Although there appeared to be a slight decline, the number of murrelets detected was similar to previous years, and the variation in number of detections from one year to the next may be due to changes in ocean conditions. Several manuscripts are in the works for publication in peer-reviewed scientific journals, including collaborations with **Zach Peery** (University of California, Berkeley [UCB]), **Dr. Grünbaum** (University of Washington, School of Oceanography), and **Dr. MacKenzie** (Proteus Research & Consulting Ltd.).

David Suddjian (David Suddjian Biological Consulting Services), in col-

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laboration with **Esther Burkett** (CDFG), continued a long-term monitoring program of Marbled Murrelets in Big Basin Redwoods State Park and Portola Redwoods State Park, in the Santa Cruz Mountains. Murrelet activity remained very low at Big Basin, continuing a documented long-term decline at what was formerly the murrelets' highest activity site in the Santa Cruz Mountains, and activity was also relatively low at Portola. In conjunction with the *Command Oil Spill Trustee Council*, Suddjian has also expanded murrelet survey coverage to include Butano State Park and San Mateo Memorial County Park. He continued surveys of corvid populations—Common Raven (*Corvus corax*) and Steller's Jays (*Cyanocitta stelleri*)—in all five of these Santa Cruz Mountain parks. The focus of this study is to compare corvid numbers in Marbled Murrelet nesting habitats in campgrounds and away from campgrounds.

Ben Becker (Point Reyes National Seashore), **Steve Beissinger** and **Zach Peery** (UCB) researched Marbled Murrelet dietary variation in Central California. Using stable isotope signatures in feathers, they have been investigating since 1998 how murrelet diets vary with breeding status, oceanographic conditions, and season, and are comparing this variation with samples taken 100 years ago. The study intends to tease apart the relative effects of oceanographic variation and fishing pressure on murrelet prey availability.

Laird Henkel (H.T. Harvey & Associates), in collaboration with the CDFG Office of Spill Prevention and Response (CDFG/OSPR), is conducting monthly at-sea surveys for Marbled Murrelets off San Luis Obispo County, more than 150 km south of their southernmost known breeding location in the Santa Cruz Mountains. The current high count for the surveys is 13 Marbled Murrelets (September 2003).

C. John Ralph and **Sherri Miller** (Bird Monitoring Laboratory of Redwood Science Laboratory, US Department of Agriculture, Forest Service) continued their off-shore monitoring of

Marbled Murrelets off the coast of Northern California, Oregon and Washington. This work continues as part of the effectiveness monitoring for the Northwest Forest Plan (NWFP). Gary Falxa and others in the USFWS Arcata office continue to collaborate in the data collection. In addition, in August 2003, the USFWS crew collected murrelet productivity data offshore (juvenile:adult ratio data) after the NWFP monitoring season ended.

FARALLON ISLANDS

Long-term monitoring of 12 species of seabirds Southeast Farallon Island (SEFI) continued under the supervision of **Russ Bradley**, **Pete Warzybok**, and **Bill Sydeman** (PRBO Conservation Science [PRBO; formerly Point Reyes Bird Observatory]), in collaboration with **Joelle Buffa** (USFWS, San Francisco Bay National Wildlife Refuge [NWR] Complex). This marks the completion of the 34th season of seabird monitoring on SEFI. Seabird species monitored are Ashy Storm-Petrel (*Oceanodroma homochroa*), Leach's Storm-Petrel (*O. leucorhoa*), Double-crested Cormorant (*Phalacrocorax auritus*), Brandt's Cormorant (*P. penicillatus*), Pelagic Cormorant (*P. pelagicus*), Western Gull (*Larus occidentalis*), Black Oystercatcher (*Haematopus bachmani*), Tufted Puffin (*Fratercula cirrhata*), Rhinoceros Auklet (*Cerorhinca monocerata*), Cassin's Auklet (*Ptychoramphus aleuticus*), Common Murre (*Uria aalge*), and Pigeon Guillemot (*Cepphus columba*). The 2003 season was a very unique year for seabirds on the Farallones. Seabird response to the projected El Niño event was highly varied. Some species showed marked reductions in breeding success compared to the last 4 years of high productivity (Brandt's Cormorants and Rhinoceros Auklets), while other species, even those normally sensitive to El Niño events (Pelagic Cormorants, Pigeon Guillemots and Cassin's Auklets) did not show poor productivity. Population estimates for all but one species showed an increase from 2002. Disturbance from California Sea Lions (*Zalophus californianus*) to nesting seabirds (especially Common

Murres) was observed at levels not seen since the 1983 El Niño. Chick diet was unique as well. For Rhinoceros Auklets, diet was dominated by Pacific saury (*Cololabis saira*), as in previous strong El Niño events. However, Common Murre diet was still approximately 50% juvenile rockfish (*Sebastes* spp.), contrasting with previous El Niño events where rockfish was virtually absent from murre chick diet.

The house mouse (*Mus musculus*) eradication plan for SEFI continued under the management of **Joelle Buffa** (USFWS), with collaboration from **Bill Sydeman** and **Peter Pyle** (PRBO) and the Island Conservation and Ecology Group (ICEG). A plan was recently completed that reviews options for eradicating non-native house mouse from SEFI, where it is known to affect Ashy Storm-Petrels and Cassin's Auklets. The plan summarizes how house mice are causing hyper-predation of Ashy Storm-Petrels by Burrowing owls (*Athene cunicularia*). Migrating owls are enticed to over-winter on SEFI because of the abundant population of mice they encounter in the fall, but when the mouse population crashes in the spring, the owls turn to feeding on petrels. The plan evaluates methods for removing mice, recommends an approach, and outlines tasks (including monitoring and baseline studies) that would be needed to eliminate this non-native threat to nesting seabirds. Funding sources for the project are currently being sought.

Joelle Buffa (USFWS) and **Bill Sydeman**, **Pete Warzybok**, and **Russell Bradley** (PRBO) also monitored reproductive success of Cassin's Auklets and Pigeon Guillemots utilizing the Meadowsweet Dairy habitat sculpture. **Henry Corning**, **Glenda Griffith**, **Dan Ustin** and **Sam Bower** (all from Meadowsweet Dairy) designed and constructed a habitat sculpture on SEFI in 2000. The Habitat Sculpture was constructed of concrete rubble from a retired building foundation on SEFI. Concrete blocks were stacked upon one another in a design engineered to create habitat for crevice nesting birds. The Habitat Sculpture also incorporated

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an observation blind as part of its design; biologists can crawl inside the sculpture and monitor the colonization of the newly-created habitat through Plexiglas windows, without disturbing the birds. The Habitat Sculpture was a resounding success. In the first year (2001), 9 of the 32 available sites were occupied by Cassin's Auklets. In 2002, 12 Cassin's Auklet pairs and 1 Pigeon Guillemot pair nested in the created habitat, and in 2003 there were 17 auklet pairs and 1 guillemot pair.

NORTHERN CALIFORNIA COAST

The Beach Watch program of shoreline surveys, coordinated by Gulf of the Farallones National Marine Sanctuary (GFNMS) and the Farallones Marine Sanctuary Association (FMSA) continued throughout the year, from Bodega Head south to Año Nuevo. In 2003, the Beach Watch program began its tenth year and produced a ten-year brochure, recapping some of the values of this survey program. Highlights include examples of the various uses of the database: beached bird deposition patterns; species list for coastal birds and mammals (alive and dead); maps of deposition zones for birds, mammals, oyster rack separator tubes, oil/tarballs, and oiled wildlife (alive and dead); beach wrack deposition and relative abundance; status of stream openings; beach erosion and deposition patterns; human activities within 90 m of the beach; and dog use patterns. The Beach Watch ten-year brochure and annual report for 2002 will be available November 2004. If in the past you have received a copy of the Beach Watch annual report, you will receive a hard copy of the annual report and the ten-year brochure in the mail by December 2004. A PDF version of the ten-year brochure can be accessed at: http://www.farallones.org/get_involved_page/beachwatch.html. **Jan Roletto** and **Joe Mortenson** (both with GFNMS and FMSA) compiled this report.

A biogeographic assessment of 76 species of seabirds in the north/central California Current System is being carried out, in support of revisions of the

Joint Management Plan Review for Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries. Project coordinators include **R. Glenn Ford** and **Janet Casey** (R.G. Ford Consulting, Portland, OR), **David G. Ainley** and **Larry Spear** (H.T. Harvey and Associates), **Carol A. Keiper** (Oikonos), and **Lisa Ballance** (National Oceanographic and Atmospheric Administration–Fisheries [NMFS]), La Jolla, California). The National Center for Coastal Ocean Science's Biogeography Program is also a collaborator. The project's website has more information on their findings: http://biogeo.nos.noaa.gov/projects/assess/ca_nms/.

The at-sea distribution and relative abundance of all seabird species in the central California Current System are being assessed by **David G. Ainley** (H.T. Harvey and Associates) and **Carol A. Keiper** (Oikonos) on the Rockfish Assessment Cruises, in collaboration with NMFS–Santa Cruz.

The Common Murre Restoration Project (CMRP) completed its eighth field season (1996–2003) of social attraction and monitoring efforts at nearshore central California Murre colonies. The CMRP is a cooperative effort by the USFWS–San Francisco Bay NWR Complex, Humboldt State University (HSU), and the National Audubon Society (NAS). Field work and other tasks in 2003 were conducted by **Gerry McChesney** (USFWS), **Hugh Knechtel**, **April Robinson**, **Christine Caurant**, **Josh Koepke**, **Nate Jones**, **Marty Murphy**, **Karen Vickers**, **Rick Golightly** (HSU), **Harry Carter** (HSU), **Steve Kress** (NAS), and **Mike Parker** (USFWS). Social attraction continued at Devil's Slide Rock (DSR; since 1996) and San Pedro Rock (SPR; since 1998), both in San Mateo County. Continued successful breeding occurred at DSR but with slightly reduced numbers of breeders and breeding success. Several factors likely contributed to lower numbers in 2003, including reduced prey availability, aircraft disturbance, and others. At SPR, murre continued to visit the de-

coy areas, but no breeding has occurred there yet. Monitoring was continued at the Castle/Hurricane Colony Complex (Monterey Co.), but the Point Reyes colony (Marin Co.) was not monitored for the first year since 1996. Annual aerial photographic surveys of northern and central California Murre and cormorant colonies were continued. Cooperation with HSU (**Phil Capitolo** and others) and USFWS has provided California cormorant data from these surveys for the West Coast assessment of cormorant populations.

Jim Harvey and graduate students at Moss Landing Marine Laboratories (MLML) continue to conduct field work on seabird ecology in the Monterey Bay area. Harvey and collaborators (MLML, Monterey Bay National Marine Sanctuary, and CDFG's Marine Wildlife Veterinary Care and Research Center [CDFG–MWVCRC]) are in the sixth year of two long-term monitoring programs—Beach COMBERS (Coastal Ocean Marine Bird/Mammal Education and Research Surveys) and “Wind-to-Whales.” Beach COMBERS is a monthly beached bird and mammal survey program whose goal is to measure natural and human-related mortality events; the project is a collaboration among MLML, Monterey Bay National Marine Sanctuary, and CDFG–MWVCRC. “Wind-to-Whales” cruises are conducted monthly to investigate dynamic interactions among marine bird and prey, primarily krill. This project is collaboration among MLML, **Don Croll** and **Baldo Marinovic** (University of California Santa Cruz, Center for Integrated Marine Technologies). MLML student **Hannah Nevins** completed a second year of field work studying the diving behavior of Common Murres, successfully recovering miniature time-depth recorders on birds caught at sea. Student **Josh Adams** has just completed a study to examine seasonal changes in body condition of Sooty Shearwaters (*Puffinus griseus*) in Monterey Bay (June–September). During this study, the noteworthy capture of a New Zealand-banded shearwater was made on 15 July

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off Santa Cruz. Both studies are funded by the California Department of Fish and Game Oil Spill Response Trust Fund through the Oiled Wildlife Care Network at the Wildlife Health Center, School of Veterinary Medicine, University of California Davis (UCD).

Breck Tyler, Jeff Davis, Laird Henkel, Brad Keitt, Dave Lewis, and Tonya Haff (all from the University of California Santa Cruz [UCSC]), are continuing to conduct twice-monthly aerial surveys of marine birds and mammals in California continental shelf waters, under contract with CDFG/OSPR and the National Wildlife Foundation. These low-level surveys are designed to collect baseline distribution and abundance data and to refine rapid response and assessment protocols for oil spills. During the past year, most surveys were conducted from Big Sur to Half Moon Bay.

OTHER STUDIES

Julie Thayer and **Bill Sydeman** (PRBO Conservation Science), with collaboration from **Gary Strachan** (California State Parks Bay Area District) are studying the long-term demography of 6 species on Año Nuevo Island. As part of Thayer's PhD dissertation at UCD with Dan Anderson, she is studying provisioning rates of Rhinoceros Auklets by installing weigh-bridges in nest boxes. Thayer and **Michelle Hester** (Oikonos) have started a project on Año Nuevo Island to restore native vegetation. Collaborators are the Año Nuevo State Reserve, Go Natives, and the University of California at Santa Cruz. The main goals of the project are to improve habitat for burrowing seabirds and other wildlife through reducing topsoil erosion; methods include planting native shrubs and grasses. Since 1998, auklet burrow collapse rates have increased to more than 50% of occupied burrows, and immediate habitat stabilization is necessary to protect the burrowing seabird populations. Initial test plots have been installed, and further work awaits funding.

Esther Burkett (CDFG) reported that a status review of Xantus's Murrelet (*Synthliboramphus hypoleucus*) is being

prepared in response to the petition for state listing as threatened, which was submitted by PSG. CDFG's report and recommendation is due to the California Fish and Game Commission on November 14, 2003.

Contaminants and breeding success in terns in the San Francisco Bay are being researched by **Cheryl Strong** (San Francisco Bay Bird Observatory [SFBBO]) and **Terry Adelsbach** (Biomonitoring and Investigations Branch, Environmental Contaminants Division, Sacramento Fish and Wildlife Office, USFWS). Levels of PCBs and mercury in Forster's Tern (*Sterna forsteri*) and Caspian Tern (*S. caspia*) eggs were analyzed, and reproductive success of the colonies was monitored to determine the effects of toxins on reproductive success. Contaminant concentrations show strong spatial patterns that appear to be linked to patterns in tern reproduction. Sites with the lowest reproductive success in Forster's Terns had elevated mercury and/or PCBs. Possible adverse effects of contaminants in these species may have population-level consequences.

SFBBO (with the support of the San Francisco Foundation) also is involved in a study to examine the proposed effort to relocate breeding Caspian Terns away from the Columbia River in Washington, where they may be causing negative effects on migrating endangered salmon. The southern San Francisco Bay is a proposed relocation site, and the quality of habitat there is an important factor in the USFWS's decision-making process. SFBBO is currently analyzing our 20+ years of data to examine the status and distribution of Caspian Terns throughout the Bay area.

Meredith Elliott, Ben Saenz, Christine Abraham, Jason Yakich and **Bill Sydeman** (all with PRBO) continue to study the diet and foraging habits of the California Least Tern (*Sterna antillarum brownii*) colony at Alameda Point, San Francisco Bay. This predator-prey study has been developed in response to proposed dredging activities in the Oakland Harbor, which is adjacent

to the tern colony. Cooperators are the Port of Oakland (**Andy Jahn**) and the Army Corps of Engineers (**Eric Joliffe**). **Rachel Hurt** and **Chris Bandy** (USFWS, Alameda NWR) continue to monitor the colony's reproductive success.

David Gardner, Ben Saenz, Julie Thayer, and **Bill Sydeman** (PRBO), in association with **Daphne Hatch** (Golden Gate National Recreational Area) continue to monitor the population dynamics and breeding performance of Brandt's and Pelagic Cormorants, Western Gulls, and Pigeon Guillemots on Alcatraz Island in relation to prey availability in central San Francisco Bay. In addition to on-colony observations, studies of the dynamics of foraging flocks in San Francisco Bay continued for a fourth year in 2003.

Julie Thayer and **Sydeman** (PRBO), with collaboration from **Gary Strachan** (California State Parks Bay Area District) are studying the long-term demography of 6 species on Año Nuevo Island. As part of Thayer's PhD dissertation at UCD with **Dan Anderson**, she is studying provisioning rates of Rhinoceros Auklets by installing weigh-bridges in nest boxes. Thayer and **Michelle Hester** (Oikonos) have started a project on Año Nuevo Island to restore native vegetation. Collaborators are the Año Nuevo State Reserve, Go Natives, and UCSC. The main goals of the project are to improve habitat for burrowing seabirds and other wildlife through reducing topsoil erosion; methods include planting native shrubs and grasses. Since 1998, auklet burrow collapse rates have increased to more than 50% of occupied burrows, and immediate habitat stabilization is necessary to protect the burrowing seabird populations. Initial test plots have been installed, and further work awaits funding.

Kyra Mills (PRBO), project coordinator of the California Current System Marine Bird Conservation Plan, along with **Ken Morgan** and **Mark Hipfner** (Canadian Wildlife Service), **Maura Naughton** (USFWS), **Brad Keitt**, **Bernie Tershy** and others with ICEG,

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and other collaborators at PRBO, continue to work on the development of this plan. It is a comprehensive seabird conservation plan for all seabird species (breeders and non-breeders) of the California Current region, from British Columbia to Baja California. Completion of Version 1 is expected in December 2003.

Peggy Yen and **Bill Sydeman** (PRBO), along with **David Hyrenbach** (Duke University Marine Laboratory), completed a manuscript for publication regarding Marine Protected Areas: "Marine bird and cetacean associations with bathymetric habitats and shallow-water topographies: implications for trophic transfer and conservation," *Journal of Marine Sciences*, in press.

Josh Ackerman (USGS and Humboldt State University [HSU]) is the coordinator for the analysis and dissemination of a large amount of seabird research that has been conducted in the Southern California Bight (SCB) since 1999. More information is in the report for Southern California.

Harry Carter recently completed a 15-year contract-based position at Humboldt State University (1989-2003). He was stationed for 14 years at the USFWS/now USGS research office in Dixon, California. He recently moved to Richmond, British Columbia, and continues to work on California and Pacific seabirds and related conservation issues through private contracts.

Mark J. Rauzon has been working on several projects in the Pacific (see Pacific Rim report).

Scott Shaffer (UCSC) is currently the program manager/coordinator for seabird research on a large multi-institutional program called Tagging of Pacific Pelagics (TOPP). Several investigators from UCSC, California State University Long Beach, University of Washington, University of Otago (New Zealand), and the National Institute of Water and Atmospheric Resources are also a part of this program. The TOPP program is currently involved in the following species and projects: (1) Foraging ecology of Laysan (*Phoebastria immutabilis*) and

Black-footed (*P. nigripes*) Albatrosses at Tern Island, Hawaii; (2) Comparative foraging ecology of Laysan Albatrosses at Guadalupe Island, Baja California; and (3) Foraging ecology and migratory behavior of Sooty (*Puffinus griseus*) and Pink-footed (*P. creatopus*) Shearwaters.

Frank Gress (UCD and California Institute of Environmental Studies [CIES]) continued his studies of Brown Pelican (*Pelecanus occidentalis*) breeding biology in the SCB, examining factors affecting reproductive success. Gress and **Laurie Harvey** (CIES) continued monitoring of pelicans, Xantus's Murrelets, and Brown Pelican breeding success on Anacapa Island, and worked on aerial photographic census techniques for breeding Brown Pelicans and Double-crested Cormorants in the SCB. (See the Southern California report for further details.) Gress and cooperators have completed a two-year study on the status of the Brown Pelican and Double-crested, Brandt's and Pelagic Cormorant populations on islands along the Pacific Coast of Baja California; further information is in the Baja California report.

SOUTHERN CALIFORNIA

Compiled by **Mark Pierson**

COASTAL

Pat Baird of California State University at Long Beach (CSULB) is conducting research on shorebird migration with a team from Simon Fraser University (SFU), Canada, headed by **Ron Ydenberg**. Grad student **Amanda Niehaus** (SFU) is helping with database searches.

Charles Collins of CSULB is continuing studies of nesting terns (*Sterna* spp.) and skimmers (*Rynchops niger*) in coastal southern California, with an eye to summarizing several years of work on their survival, food, growth and intercolony movements.

Frank Gress (University of California at Davis [UCD] and California Institute of Environmental Studies [CIES])

continued his studies of Brown Pelican (*Pelecanus occidentalis*) breeding biology in the Southern California Bight (SCB), examining factors affecting reproductive success. Frank and **Laurie Harvey** (CIES) continued monitoring of Brown Pelican breeding success on Anacapa Island for the *American Trader* Trustee Council, and they worked on developing aerial photographic census techniques for breeding Brown Pelicans and Double-crested Cormorants (*Phalacrocorax auritus*) in the SCB. Other research involved the continued monitoring of Double-crested, Brandt's, (*P. penicillatus*) and Pelagic (*P. pelagicus*) Cormorants on Anacapa Island, along with USGS. He also collaborated with **Darrell Whitworth** (CIES) to continue monitoring of Xantus's Murrelets (*Synthliboramphus hypoleucus*) on Anacapa Island for the *American Trader* Trustee Council. Gress and Harvey will begin a study of Brown Pelican diet components and feeding ecology in the Southern California Bight in 2004, in cooperation with the California Department of Fish and Game (CDFG; **Esther Burkett**) and U.S. Geological Survey (USGS).

Patrick Mock finished his second term as Southern California representative on the PSG executive council. He is still a Senior Biologist for a large international environmental consulting firm. His current projects include habitat conservation planning for the cities of Rancho Palos Verdes (Los Angeles County) and San Marcos (San Diego County). He is also the lead biologist for four Bureau of Land Management's Resource Management Planning programs in Arizona and New Mexico. He recently oversaw a biological assessment of a proposed liquid natural gas project located near Coronado Island, Baja California, where significant seabird colonies are located.

Charles A. Pelizza of the U.S. Fish and Wildlife Service and **Eduardo Palacios** of the Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE) are documenting the population status and breeding colony

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sites of Gull-billed Terns (*Sterna nilotica*) in southern California and the Gulf of California. This is a binational effort with multiple investigators. The primary focus is to determine the population status and breeding sites of the species. A literature search, aerial reconnaissance, and ground observations will be used to document the status of the Gull-billed Tern in order to determine whether listing of the species as threatened or endangered is warranted.

Dan Robinette, Adam Brown, Natalia Collier, and Bill Sydeman (PRBO Conservation Science, Marine Science Division) continued the fifth year of an anticipated long-term research program at Vandenberg Air Force Base (VAFB), California. **Nancy Read Francine** (VAFB) has been invaluable in keeping this project funded. Species of interest include Brown Pelicans, Pigeon Guillemots (*Cepphus columba*), Brandt's and Pelagic Cormorants, California Least Terns (*Sterna antillarum browni*), Black Oystercatchers (*Haematopus bachmani*), Western Gulls (*Larus occidentalis*), Ashy Storm-Petrels (*Oceanodroma homochroa*), Rhinoceros Auklets (*Cerorhinca monocerata*), Sooty Shearwaters (*Puffinus griseus*), and Pacific Loons (*Gavia pacifica*). Research includes data collection on population dynamics, breeding biology, foraging habits, diet, roost utilization, and migration. Most data are collected during the breeding season; however, data on roost utilization is collected year-round. Annual monitoring is conducted on rocky coast species, including Pigeon Guillemot, Brant's Cormorant (which Read Francine first discovered nesting here in 1995), Pelagic Cormorant, Rhinoceros Auklet, Western Gull, and Black Oystercatcher. Least Terns also are being monitored, as is roost utilization by Brown Pelicans.

Perhaps the most significant result at VAFB is the discovery of a possible Ashy Storm-Petrel breeding population. Ashy Storm-petrels have been caught in mist nets for the third consecutive year. In an attempt to determine whether the species is nesting on the mainland or is

coming from an offshore breeding area, radio transmitters were placed on 3 birds in 2003. However, the birds were never relocated. Rhinoceros Auklets are observed in the area, but breeding has yet to be confirmed.

Esther Burkett (CDFG) reported that a status review of Xantus's Murrelet (*Synthliboramphus hypoleucus*) is being prepared in response to the petition for state listing as threatened, which was submitted by PSG. CDFG's report and recommendation were due to the California Fish and Game Commission on November 14, 2003.

PELAGIC

Josh Ackerman (USGS and Humboldt State University [HSU]) is the coordinator for the analysis and dissemination of a large amount of seabird research that has been conducted in the Southern California Bight (SCB) since 1999. The current distribution and abundance of seabirds off Southern California, especially near the northern California Channel Islands, were assessed by conducting aerial surveys and using radiotelemetry. The principal investigators for this project are **John Takekawa** (USGS), **Rick Golightly** (HSU), **Dennis Orthmeyer** (formerly USGS) and **Harry Carter** (HSU). For aerial surveys, they examined all seabird species seen during the survey months (Jan, May, Sep) for years 1999-2002. The project leader for the aerial surveys was **Gerry McChesney** (formerly USGS, HSU), but now **John Mason** (USGS, HSU) is in charge of the publication. **Mark Pierson** (Minerals Management Service, U.S. Department of the Interior) is the lead for the marine mammal data collected on the same surveys. **Josh Adams** (USGS, MLML) is leading the radiotelemetry project on Cassins Auklets, and **Christine Hamilton** (HSU) is leading the radiotelemetry project on Xantus's Murrelets. A few papers have been submitted for publication.

Jaime Jahnce's research at the University of California at Irvine focuses on relationships between seabirds, prey, and physical mechanisms responsible for

prey availability in coastal marine ecosystems. [See the Alaska report.]

Lisa T. Ballance and **Robert L. Pitman** of the National Oceanic and Atmospheric Administration Fisheries, Ecology Program, Southwest Fisheries Science Center, have been focusing on the eastern tropical Pacific this year. [See the Hawaii and Pacific report.]

INLAND

Studies of survival and dispersal of California Brown Pelicans (*Pelecanus occidentalis californicus*) that are rehabilitated from Type C botulism poisoning at the Salton Sea, California, are being conducted by **Charles Pelizza, Dan Anderson** (UCD), **Frank Gress** (CIES), **Laurie Harvey** (CIES), and **Paul Kelly** (CDFG). They are studying both rehabilitated and healthy pelicans, using behavioral observations and conventional and satellite transmitters to document movements between the Salton Sea, southern California coast, and breeding colonies in Baja California.

In addition to the two studies listed above, there are several research projects involved with the effects of botulism on White (*P. erythrorhynchos*) and Brown pelicans, in particular determining the etiology of botulism at the Salton Sea. The study involves researchers from UCD, USGS's National Wildlife Health Laboratory in Madison, Wisconsin, the California Polytechnic Institute-Ramona, and the Sonny Bono Salton Sea National Wildlife Refuge.

BAJA CALIFORNIA

Compiled by **Mark Pierson** and **Meridith Elliott**

Frank Gress has completed a two-year study to assess the status of the Brown Pelican and Double-crested, Brandt's and Pelagic Cormorant populations on islands along the Pacific Coast of Baja California (Los Coronados, Todos Santos, and San Martín). Collaborators on this study are **Eduardo Palacios** of the Centro de Investigación

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Científica y de Educación Superior de Ensenada (CICESE), **Laurie Harvey** (California Institute of Environmental Studies), and **Dan Anderson** (University of California at Davis [UCD]). This study is being funded by the U.S. Geological Survey (**John Takekawa**, principal investigator). They anticipate continuing the study in 2004, contingent on funding.

Palacios and **Edgar Amador** of the Centro de Investigaciones Biológicas del Noroeste (CIBNOR) are currently monitoring seabirds breeding in the Baja California coastal wetlands. Palacios has been coordinating a network of institutions devoted to the conservation of the California Least Tern (*Sterna antillarum*) in four nesting sites on the Baja California peninsula (Estero de Punta Banda, Guerrero Negro, La Paz, and San José del Cabo).

Scott Shaffer (University of California at Santa Cruz; UCSC) is currently the program manager/coordinator for seabird research on a large multi-institutional program called Tagging of Pacific Pelagics (TOPP). Several investigators from UCSC, California State University Long Beach, University of Washington, University of Otago (New Zealand), and the National Institute of Water and Atmospheric Resources are also a part of this program. Among their studies is the comparative foraging ecology of Laysan Albatrosses (*Phoebastria immutabilis*) at Guadalupe Island, Baja California. (See the Southern California report for other TOPP projects).

NON-PACIFIC UNITED STATES

Compiled by **Malcolm Coulter**

Betty Anne Schreiber (National Museum of Natural History, Smithsonian Institution, SchreiberE@aol.com) completed her 21st year of research on Johnston Atoll. Dive loggers were placed on almost 60 boobies to determine activity patterns at sea, both Red-foots

(*Sula sula*) and Browns (*S. leucogaster*). She was assisted by **Sue Lewis** and **Francis Daunt** from Scotland. The loggers record temperature and the number and depth of dives on a one-second time line. An analysis of Brown Booby adult survival (with **J. Beadell**) was published in Auk 120, number 2. A detailed analysis of adult and juvenile survival of Red-tailed Tropicbirds (*Phaethon rubricauda*) on Johnston Atoll, done with Paul Doherty and others, has been accepted by *Oikos* and will be out soon.

Jeff Spindel (U.S. Geological Survey, Patuxent Wildlife Research Center, Laurel, Maryland) has been continuing his long-term cooperative studies of the metapopulation dynamics and ecology of Roseate Terns (*Sterna dougallii*) in the Massachusetts-New York region. He also has been collaborating with an international team of capture-recapture modelers to develop new methods to estimate age-specific breeding rates (Spindel et al. 2002, *Journal of Applied Statistics* 29:385-405), multi-site recruitment, fidelity and dispersal rates (Lebreton et al. 2003, *Oikos* 101:253-264), and sex-specific survival rates when the sex of an individual cannot be determined every time it is captured or seen (Nichols et al., manuscript in review).

Spindel's longtime study site on Falkner Island, Connecticut recently suffered a major decrease in the productivity and numbers of breeding Roseate Terns because of intensive predation by Black-crowned Night Herons (*Nycticorax nycticorax*) over several years. Therefore he also began work in 2003 at a new Roseate Tern colony on Penikese Island in Buzzards Bay, Massachusetts. This colony was formed mostly because terns were hazed in May at nearby Ram Island, in an effort to prevent them from becoming oiled from a spill that occurred in Buzzards Bay in late April. Spindel and his collaborators presented information on the origins and ages of 262 previously-banded Roseate Terns identified at this new colony site

in a poster at the 2003 Waterbird Society meeting. They are planning a detailed study of the movements of these birds over the next several years to see which ones remain at the new site, which will return to Ram Island, and which will move to other colony sites.

Rebecca Lewison, a research associate at Duke University, is expanding the focus of recent research that assessed seabird bycatch in the central and North Pacific. In collaboration with Geoff Tuck of CSIRO (Commonwealth Scientific and Industrial Research Organisation, Australia) and Birdlife International, she is developing a seabird bycatch project that takes a global perspective. The project will synthesize existing seabird bycatch data from longline fisheries worldwide into a comprehensive database. The objective of this global approach is to integrate data at a spatial scale that will be relevant to both imperiled seabird populations and to the multinational longline fisheries with which they interact. These efforts complement several international projects that are compiling spatial distribution data for seabirds globally. The goal of the project is to develop a database that can be used to analyze bycatch patterns, help generate estimates of bycatch for at-risk seabird species around the world, and link fishing effort and spatial distribution data to foster a more complete analysis of fisheries effects on seabird populations.

Heidi J. Auman is beginning a Ph.D. program at the University of Tasmania in Australia. Her research focuses on developing an anthropogenic disturbance beach index incorporating spatial and temporal responses in various gulls, terns and shorebirds of Tasmania.

For the second year, **Jim Kushlan** and **Melanie Steinkamp** continued their inventory of seabird colonies of the Little Bahamas Banks. This year's survey concentrated in eastern Abaco. The most significant finding was the documentation of a Magnificent Frigatebird (*Fregata magnificens*) colony in the eastern Marls.

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HAWAII AND PACIFIC

Compiled by **Beth Flint**

HAWAIIAN ISLANDS

Jeremy Bisson (Department of Zoology, University of Hawaii) is continuing a study of the diets of Black-footed and Laysan Albatrosses (*Phoebastria nigripes* and *P. immutabilis*) salvaged from the Hawaii-based pelagic longline fishery, using stomach samples and analysis of isotope ratios from tissues. The project is under the supervision of **David Duffy**, with support from the U.S. Fish and Wildlife Service (USFWS) and the University of Hawaii Manoa. Personnel of the Longline Observer Program, National Marine Fisheries Service (NMFS) Honolulu, play a crucial role in making this study a success.

Aaron Hebshi (University of Hawaii) is continuing his dissertation research on the effects of changes in skipjack tuna (*Katsuwonus pelamis*) abundance on Wedge-tailed Shearwater (*Puffinus pacificus*) breeding success and chick growth. He is weighing—or having volunteers weigh—Wedge-tailed Shearwater chicks at 11 colonies around the Archipelago.

Dave Smith, Hawaii Department of Land and Natural Resources, Division of Forestry and Wildlife and his staff just finished their annual Wedge-tailed Shearwater surveys. He reports that the numbers look within the range of normal values. Hebshi continues work on Wedge-tailed Shearwater chick growth correlated to availability of offshore food resources as reflected in the abundance of skipjack tuna. He has data from the Mokulua islands, Kaohikaipu, Kaena Point, Kure Atoll, among others. **Sheldon Plentovich** and **Ann Bell** continue work with Lanikai School students to produce educational signs for the Mokulua Island seabird sanctuaries. Plentovich is also studying the effects of introduced ants and ant control on nesting seabirds on the Mokulua Islands, Popoia and Mokuauia. The eradication of black rats (*Rattus rattus*) on Mokolii Island seems to have been successful.

Wedge-tailed Shearwater have gone from one chick (total) in 3 years (1999, 2000, 2001) to 126 chicks in 2002 and 185 chicks in 2003. Other signs include lots of regeneration of vegetation, including *Panicum faurei* (an endangered species).

Coral reef surveys are planned for the spring of 2004 adjacent to the island seabird sanctuary islands offshore of Oahu. A Fishery Management Area is proposed for the Lanikai area, framed by the Mokulua and Popoia islands and the adjacent near-shore waters.

Jenness McBride and other staff at the Ecological Services Division of the Pacific Islands Fish and Wildlife Office continued to work with the Kauai Island Utility Cooperative (KIUC), to reduce and monitor the risk of seabird collisions at powerlines and to develop a Habitat Conservation Plan (HCP). The plan will minimize and mitigate seabird take associated with all KIUC facilities and operations on Kauai. During the development of the HCP, KIUC has been operating under a Memorandum of Agreement with the Fish and Wildlife Service to implement interim conservation measures that will reduce seabird collisions at powerlines, and to initiate long-term measures to offset powerline mortality by increasing productivity at nesting colonies. For example, KIUC has installed shields or full-cutoff fixtures on power-pole streetlights in collision “hotspots,” accelerated its program to modify all power-pole streetlights that still lack shielding, and will place aviation warning balls on powerlines where needed over the next 3 to 6 months. KIUC, in cooperation with the Service, is also investigating predator control options for implementation at a suitable nesting colony site, by next breeding season if possible. Meanwhile, the HCP development process will provide significant opportunities for public participation and peer review.

Bob Day (ABR, Inc.) escaped Alaska for the Big Island of Hawaii to work on several projects assessing the impact of radio towers on Hawaiian Petrels (*Pterodroma phaeopygia*) and

Newell's Shearwaters (*Puffinus newelli*). He conducted final surveys to evaluate the effects of constructing a US Coast Guard differential GPS tower at Pahoa. He also conducted surveys to evaluate the effects a similar Coast tower and a wind farm at Upolu Point, and to evaluate the effects of constructing digital microwave emergency cell-phone towers at several locations.

Holly Freifeld worked on USFWS's Biological Opinion for the Short-tailed Albatross (*Phoebastria albatrus*) in the Hawaii Pelagic Longline Fishery. She also taught seabird identification to new fishery observers in that fishery. She attended a meeting sponsored by Birdlife International and the South Pacific Regional Environment Programme (SPREP) in Fiji to discuss bird conservation in the Pacific Islands. Holly also was the field leader of the most recent albatross count on Midway, which was completed in December. She and team of 20 hardy volunteers counted over 440,000 Laysan Albatross nests in a two-week period. **Eric VanderWerf** has been actively collecting, collating and coordinating data on the White Tern (*Gygis alba*) population on Oahu. He traveled to the Tuamotus earlier in the year to survey seabirds and shorebirds on some rarely visited islands (see “Pacific,” below).

Cathleen Natividad and the biological staff at Haleakala National Park continue to find new Hawaiian Petrels (*Pterodroma sandwichensis*) nests. They have been toying around with the seabird radar, but have not completed any solid studies yet.

Eric Gilman (Blue Ocean Institute), **Nigel Brothers** (Marine Ecology and Technology Consultant), and **Donald R. Kobayashi** (NMFS, Pacific Islands Fisheries Science Center) finished work on a paper entitled “Assessment of seabird avoidance methods in Hawaii pelagic longline fisheries.” They found that mortality in longline fisheries is a critical global threat to some seabird species. Identifying and mainstreaming seabird avoidance methods will help resolve this problem globally; it is crucial that such

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methods not only have the capacity to minimize bird interactions, but also are also practical and convenient, thereby providing crew with incentives to employ them consistently and effectively. Cooperative research and a commercial demonstration were conducted to assess three methods as to effectiveness at avoiding incidental seabird capture, commercial viability, and practicality in the Hawaii pelagic longline fisheries. One seabird avoidance method that they tested is called side setting; it entails setting gear from the side of the vessel, using gear that otherwise designed the same as when set conventionally from the stern. Side setting had the lowest mean seabird contact and capture rates of treatments tested. Side setting promises to provide large operational benefits for longline vessels—it requires only a single work area and eliminates the need to move large quantities of gear and bait between setting and hauling positions. Therefore the incentive for broad industry uptake and voluntary compliance is realistic. After the initial conversion to side setting, no additional effort is required to employ the method.

A seabird avoidance method called an underwater setting chute also holds high promise, but this requires additional research and evaluation to correct design problems, after which it can be considered for commercial availability. Two chutes, one 9 m long and one 6.5 m long, which deployed baited hooks 5.4m and 2.9m underwater respectively, were used in this trial. The 9-m chute had the second-lowest mean seabird interaction rates when used with swordfish gear, and the 6.5-m chute had the second lowest mean seabird interaction rates when used with tuna gear. A third seabird avoidance method entails thawing bait and dyeing it dark blue, in an attempt to reduce its attractiveness to seabirds. The idea is that baits are less visible if their contrast with the sea surface is reduced. However, bait alteration was found to be less effective than the other two methods; also, it was relatively impractical and inconvenient. If pre-dyed bait were commercially available, use of blue-dyed bait in combina-

tion with other methods, such as side setting and adequate line weighting would have high promise. The corresponding author for this work is Eric Gilman (ericgilman@earthlink.net).

Eric Gilman also continues to work with Sea Life Park and the Humane Society to improve data collection and effectiveness for their programs to rescue downed shearwaters (*Puffinus* spp.) on Oahu.

Monitoring of seabirds in the Hawaiian Islands National Wildlife Refuge (NWR) continued in 2003. **Beth Flint** and **Cindy Rehkemper** coordinated efforts from Honolulu, and **Chris Eggleston** and **Jennifer Tietgen** managed the program at Tern Island. As usual, much of the actual crawling around under the bushes and getting nipped by birds was accomplished by the dedicated volunteers at the field stations. **Alex Wegmann** is currently stationed at Tern Island; his work is to minimize impacts to seabirds during the upcoming effort to construct and repair the seawall there. Biological Technicians **Chris Depkin** and **Kevin Payne** and volunteer **Greg McClelland** conducted the annual albatross count at Laysan Island in December of 2003. Flint accompanied an expedition throughout the Northwestern Hawaiian Islands led by **Jean-Michel Cousteau** in July. Look for the documentary about conservation issues above and below the ocean surface that the Ocean Futures Society will produce on Public Television in the fall of 2004.

John Klavitter presided over biological activities at Midway Atoll NWR. He and the staff at Midway placed albatross decoys, serviced the sound system, and cleared the vegetation for the ongoing colony attraction project that we hope will lure Short-tailed Albatrosses to Midway Atoll. **Lee Ann Woodward** (Ecotoxicologist for the Pacific Remote Islands NWR Complex) spent most of December 2003 at Midway counting albatrosses and continuing her studies of the effects of contaminants on breeding performance in Laysan and Black-footed Albatrosses. **Paul Doherty** (formerly of USGS-BRD and now at Colorado State

University) and **Bill Kendall** (USGS-BRD Patuxent) have almost finished their project that brings together all banding, rebanding, resighting, and recapture data for Laysan and Blackfooted Albatrosses and uses it to model population health. **Maura Naughton**, USFWS Division of Migratory Birds, has secured funds to draft a status assessment for Laysan and Black-footed Albatrosses during the upcoming year, and to start drafting a seabird monitoring plan for Hawaii.

Keith Swindle, USFWS Enforcement, worked with community members to improve safety in several ways for Wedge-tailed Shearwaters nesting on Oahu, including documentation of areas with high fallout rates, working on better light control, and educating the community about the importance of keeping dogs and cats at home.

Brenda Zaun at the Kauai NWR Complex continues her work monitoring seabirds at Kilauea Point. This year she documented the success of two Newell's Shearwater (*Puffinus newelli*) nests at Kilauea Point. She also studied attendance behavior of the adults using an automatically triggered camera, plus a TrailMaster, a device that monitors levels of use on hiking trails.

Scott Shaffer (UCSC) is currently the program manager/coordinator for seabird research on a large multi-institutional program called Tagging of Pacific Pelagics (TOPP). Several investigators from UCSC, California State University Long Beach, University of Washington, University of Otago (New Zealand), and the National Institute of Water and Atmospheric Resources are also a part of this program. Among projects of the TOPP program is the foraging ecology of Laysan and Black-footed Albatrosses at Tern Island, Hawaii.

FRENCH POLYNESIA

A major advance in conservation in the Pacific has been underway since July 2002. In that month, scientists and conservation administrators from the governments of Kiribati (Line Islands), the United States (Palmyra Atoll and

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Kingman Reef), Cook Islands (Penrhyn Atoll), and Republic of French Polynesia (northern Tuamotu Archipelago) agreed to a major multi-national conservation initiative. Its goals were to (1) provide an informal forum to facilitate, coordinate, enhance, and harmonize bird research, management, monitoring, and education activities within the Central Pacific Flyway, and (2) provide a framework to link national bird programs in the Central Pacific Flyway and deliver bird conservation on a flyway basis. As the first step in fulfilling these goals, an international expedition was planned to visit remote atolls in the central and southern Tuamotu Islands of French Polynesia. The purpose was to document the presence of threatened avian species and investigate the risk posed by mammalian pest species.

The coral Tuamotu archipelago consists of 78 low-lying and scattered atolls that lie along a northwest-southeast line (from 14° S to 24° S and from 134° to 149° W), 300 to 1600 km from Tahiti. The total area of the archipelago, including water, is greater than 800,000 km², but less than 7% of the territory is inhabited. Access to these atolls is dangerous, since they are difficult to sight accurately, as well as being surrounded in many places by coral reefs.

Some of these atolls had not been visited by biologists in 60 years, and much about the wildlife was unknown. A diverse group of biologists—from the Society of Ornithologists of Polynesia (Société d'Ornithologie de Polynésie), Wildland Consultants of New Zealand U.S. Fish and Wildlife Service (USFWS) in Alaska and Hawaii, and the U.S. Geological Survey in Alaska—combined their finances and personnel to conduct this expedition. Wildland Consultants was supported by a grant from the Zealand Agency for International Development (Pacific Initiatives for the Environment).

During March 2003, a team of biologists went on the SOP Manu Expedition through the Tuamotus aboard the *M/V Bounty Bay*, a 15-meter, 35-ton motor catamaran. Among the main objectives

was to evaluate the status of seabirds on atolls throughout the chain. Another priority was to determine infestation levels of mammalian pests (rats [*Rattus* spp.] and cats) in order to make recommendations for their eradication. Other important objectives included determining the presence and approximate numbers of the critically endangered Tuamotu Sandpipers (*Prosobonia cancellatus*), Polynesian Ground Doves (*Gallinula erythroptera*), Atoll Fruit Doves (*Ptilinopus coralensis*), and Bristle-thighed Curlews (*Numenius tahitiensis*). In addition, the first ever systematic pelagic surveys in the region were conducted. Project personnel were: **Philippe Raust** and **Jean Marc** (Société d'Ornithologie de Polynésie, Tahiti), **Ray Pearce** (Wildlands Consultants, New Zealand), **Ed Saul** (Rarotonga), **Graham Wragg** (New Zealand), **Verena Gill** and **Richard Lanctot** (USFWS Anchorage), **Lee Tibbetts** (USGS Anchorage), **Eric VanderWerf** (USFWS Honolulu), and **Johanna Squire** (Australia). Crew of the *Bounty Bay* from New Zealand were Captain **Graham Wragg**, **Matt Veitch** and **Sheree Christian** (Sheree is a descendant of the infamous Fletcher Christian of "Mutiny on the *Bounty*" fame), **Liz Senear** and **Bert Stammerjohan** (Cordova, Alaska), and **Jen Selvidge** (UK).

The SOP Manu Expedition visited ten atolls between the 4 and 26 March 2003. The trip spanned an area from Mangareva in the Gambier Island group to Fakarava in the central Tuamotus and across to Tahiti in the Society Islands. Thirty species of birds were detected on atolls during the expedition. The number of species on each atoll ranged from 13 to 20 birds. The most numerous species was the Common White Tern (*Gygis alba*), followed closely by the Brown Noddy (*Anous stolidus*), Red-footed Booby (*Sula sula*), and Lesser Frigatebird (*Fregata ariel*). Significant seabird colonies were found on Morane, Reitoru, Tekokota, Tahanea, and Fakarava. Morane was the only atoll confirmed free of mammalian pests; Tekokota and some isolated motu of

Tahanea and Fakarava also appeared to be mammal-free. Nearly 1500 individual birds belonging to 26 bird species were recorded during pelagic surveys. The most common bird observed was the Brown Noddy (half the sightings), followed by the Common White Tern and Red-footed Booby.

Although pest eradications seem very feasible, given the methodologies and pesticides developed by the New Zealanders, there are several problems with eradicating pests in French Polynesia. First, funds are seldom obtained to implement eradication efforts repeatedly on a single atoll. Previous attempts to rely on local villagers to continue pesticide applications after biologists have left the area have proven unsuccessful. Second, even if eradications are successful, there is little one can do to protect these remote atolls from having pests introduced again. Designation of sites as World Heritage Sites may not be sufficient to prevent future introductions. Any atolls or islands that are freed of pests should provide new sanctuary for endemic and migratory species.

Very little money is available for conservation work in French Polynesia. SOP-Manu represents the only group of people interested in bird life. Other countries, such as New Zealand and Australia, typically fund studies of the bird life in the area. SOP-Manu desperately needs funds to hire full-time staff that can write grant proposals that will allow future pest eradication and bird reintroductions. Besides finances, perhaps the biggest obstacle to bird conservation in French Polynesia is convincing native Polynesians that birds are important and worthy of protecting. This may be difficult because eradication efforts may involve the removal of goats and sheep, which are used for food by native Polynesians. SOP-Manu representatives believe the best way to convince the locals that pest eradication is possible and beneficial is to have locals visit islands in New Zealand where eradications have been successful.

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ELSEWHERE IN THE PACIFIC

Lindsey Hayes, Kathy Brooks, and Joe Wiggins continued to monitor seabird populations at Johnston Atoll, manage wildlife populations during the closure of the military facility and environmental cleanup, and prepare for the closure of the USFWS's field station at the Atoll.

In a project being managed by **Steve Barclay**, manager of the Central Pacific Refuges of the Remote Islands NWR Complex, Aaron Hebshi (University of Hawaii) and a number of other entomologists and ecologists began to address the acute problem of a mass die-off of *Pisonia grandis*. This plant is the preferred nesting habitat of several tree-nesting seabirds at Palmyra Atoll NWR. The problem is being caused by two invasive Homopterans, a scale insect and a mealybug, and exacerbated by several species of introduced ants. A range of solutions is being investigated, including pesticide control of ants and scale insects, and the release of biological control agents.

Mark J. Rauzon has produced a compact disc of Tahiti Petrel (*Pseudobulweria rostrata*) calls; it is available online at <http://www.hear.org/pcsu/tahitipetrels/>. In addition, Rauzon completed a second survey and mapping of seabird colonies in and outside the National Park of American Samoa on Tutuila. This colony catalog will also be available online. At Wake Atoll, Rauzon, **Bill Everett** and **John Gilardi** of the Endangered Species Recovery Council eliminated 130 feral cats in two months. They discovered that cats can climb trees to take noddies (*Anous* spp.) and White terns (*Gygis alba rothschildi*). The team also found a new range extension here for the Black-winged Petrel (*Pterodroma nigripennis*) and Laughing Gull (*Larus atricilla*).

Lisa T. Ballance and **Robert L. Pitman** of the National Oceanic and Atmospheric Administration Fisheries (NOAA-F) Ecology Program, Southwest Fisheries Science Center, have been focusing on the eastern tropical Pacific this year. They were at sea from late July to

mid-December aboard two ships taking part in the "Stenella Abundance Research Project." More information is at <http://swfsc.nmfs.noaa.gov/prd/star/default.htm>. A major focus of this project is ecosystem assessment, especially through seabird surveys. The study area includes waters between San Diego, Hawaii, and Peru. Besides an at-sea survey of seabird distribution and abundance, they also are conducting colony censuses of seabirds on the oceanic islands of Clipperton, San Benedicto, and Guadalupe. This year forms the basis for at-sea and island censuses of seabirds that date back to the late 1970s. Ballance and Pitman are currently writing a paper on the status of Clipperton Island seabirds, and they have plans to update the atlas of Pacific seabird distribution and abundance in the eastern tropical (Pitman 1986).

SOUTHEAST ASIA

Compiled by **Beth Flint** and **Malcolm Coulter**

CHINA

Cao Lei (CaoLei@ustc.edu.cn) reports that eight islands of the Xisha Archipelago in the South China Sea were surveyed in March-April 2003, and 48 bird species were recorded. The islands were Yongxing, Shi, Dong, Chenhang, Guangjin, Shanhu, Jinying, and Zhongjian. The Great Frigatebird (*Fregata minor*) and Red-footed Booby (*Sula sula*) were breeding only on Dong Island in this archipelago. The observers estimated 25,000 pairs of breeding Red-footed Boobies, the largest breeding colony in the western Pacific. A Great Frigatebird colony of seven nests was found on Dong Island, just within the colony of the Red-footed Boobies. Later during the field survey, two nests were found to have been destroyed, but chicks in three nests were 1-2 months old. Two non-breeding males and 13 juveniles (9 with russet heads and 4 white-headed) also were observed. Despite habitat degradation and human disturbance, these

breeding seabird colonies need to be preserved.

KOREA

Several biologists have been working on Saunders' Gulls (*Larus saundersi* Swinhoe), an internationally endangered species with about 7000 surviving individuals in the world. **Kyung Gyu Lee** reports that **Heon-Woo Park** (phw8033@hanmail.net) finished his doctoral course under **Prof. Sooil Kim** at Korea National University of Education. His work was breeding ecology of Saunders' Gulls during five years from 1999 to 2003, clarifying several aspects of the breeding ecology of about 500 breeding individuals of Saunders' Gulls that were newly found in Korea. The study especially focused on limiting factors, breeding site selection, characteristics of the breeding grounds, and threats. Now they are interested in supernormal clutches related to interspecies parasitism of Saunders' Gulls. **Hak-Jin Kim** (saunders@unitel.co.kr) also has been studying the wintering ecology and foraging behavior of Saunders' Gulls on the Kum River Estuary, on the west coast of Korea. In particular, he studied the changing pattern of foraging behaviors of the gulls according to wind velocity and tides. He wants to verify the evolutionary differences in foraging behaviors of two species, Black-headed Gulls (*Larus ridibundus*) and Saunders' Gulls.

Kyung-Hee University has been very active in seabird research. **Young-Soo Kwon** (auk1005@hanmail.net) completed his fieldwork for his doctoral thesis under **Prof. Jung-Chil Yoo**. He studied some breeding strategies of Black-tailed Gulls (*Larus crassirostris*) at Hong-Do Island, including the effect of laying date, parental quality, and sex ratio of the brood on breeding success of Black-tailed Gulls. He also examined the distance of natal dispersal, and he looked at intraspecific nest parasitism in relation to the occurrence of supernormal clutches. **Who-Seung Lee** (tgmusic@

hanmail.net) also finished fieldwork for his master's thesis at Kyung-Hee University, for which he studied habitat and

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nest-site selection of Black-tailed Gulls at Hong-Do Island. The main point of his research was the effect of nest-site characteristics on breeding success and ideal free distribution of Black-tailed Gulls. In a further study, he hopes to examine ecological modeling of habitat selection and life history. **Ki-Baek Nam** (ibis02@

hanmail.net) finished his master's course at Kyung-Hee University. He mainly focused on the effects of parental condition of Streaked Shearwaters (*Calonectris leucomelas*) on incubation routine and nest and mate fidelity. **Jeong-Hoon Kim** (birdlove@hanmail.net) is studying a doctoral course at Kyung-Hee University. As part of his fieldwork, he surveyed the nest failure rates of the Little Tern (*Sterna albifrons*) caused by flooding and predation at Bunam Lake, Seosan, Korea in 2003. About 150 out of 200 nests were destroyed by flooding. All chicks hatched in 50 nests were taken by a Kestrel (*Falco tinnunculus*). A mass

reduction of breeding pairs may reduce the efficiency of the Little Tern's mobbing behavior. After the first flooding, replacement clutches were destroyed by a second flooding. The eventual breeding success was estimated at 0 percent in 2003.

Kyung-Gyu Lee (scops@hanmail.net) visited Sasudo Island to collect feather samples of Streaked Shearwaters and to survey the ratio of active burrows during the late chick-rearing period. The weight of chicks was about 30% higher than that of adults. Using the quadrat method (10 m by 10 m, $n = 34$), he counted active burrows in quadrats and found that they were about 27% of study burrows. **Ji-Doek Jang** (jdjang@donga.ac.kr) is studying a master's course under **Prof. Ki-Jung Kwon** at Dong-A University. His study is foraging and energy intake of the Little Tern during the breeding season at the Nakdong River estuary.

At the annual spring meeting of The Korea Society of Ornithology on 2-3 May 2003, **Kisup Lee** (larus@hanmail.net), **Tim Allison**, **Dong-Won Kim**, **Neil Moores**, **Jin-Young Park**, and **Sun-Gyu Choi** presented a paper on observations of two gulls newly recorded in Korea, the Great Black-headed Gull (*Larus ichthyaetus*) and Thayer's Gull (*L. thayeri*). Also, **Jin-Young Park** (turnstone@hanmail.net), **Hyun-Tae Kim**, **Woo-Su Kim**, and **Dong-Won Kim** presented observations on color-flagging of three gulls, Saunders', Black-tailed, and Slaty-backed (*Larus schistisagus*). These observations enable us to know their migration route. According to their presentation, Black-tailed Gulls and Slaty-backed Gulls ringed at breeding sites on Hokkaido, Japan wintered on the east coast of Korea, while Saunders' Gulls ringed at their breeding site in the Shuangtai Hekou bird sanctuary, China wintered on the west coast of Korea.

SECRETARY'S REPORT

SUMMARY OF PROPOSED MINUTES OF THE 2003 PACIFIC SEABIRD GROUP EXECUTIVE COUNCIL MEETING

Parksville, Canada, 19 and 20 February 2003

[The full text of the minutes is available from the Secretary, Lora Leschner (leschl11@dfw.wa.gov). They become official when they are approved at the 2004 Executive Council meeting.

[The minutes of the 2004 meeting will be printed in the Spring 2004 issue.]

19 February 2003

Present were Lisa Balance, Lora Leschner, Beth Flint, Vivian Mendenhall, Bill Sydeman, Meredith Elliot, Stephani Zador, Verena Gill, and Dave Irons; also Ron LeValley (Treasurer-elect). Absent were Jan Hodder, Pat Mock, Malcolm Coulter, Mark Tasker, Craig Harrison, and Breck Tyler. Ballance and Flint held proxies for absent members.

MINUTES

Minutes from the 2002 meeting were approved.

TREASURER'S REPORT

The treasurer was not present, but the Treasurer's Report was published in *Pacific Seabirds*. It was approved by the Council.

The Council reviewed the past budget. The sum of US\$925 was still due to PSG from the University of Hawaii for the 2001 meeting in Kauai. Due to this oversight, the financial report for that meeting has not yet been completed.

The Council reviewed the proposed budget for 2003-2004. There was discussion of the need to coordinate PSG's fiscal and calendar years.

MEETINGS

[See also the minutes summary for 20 February]

2003 Meeting

David Irons reported on the 2003 meeting. The committee provided stu-

dent travel awards, and a lifetime achievement award will be given. The symposium topic of offshore wind farms is a new discussion for PSG. There is a session on Seabird biogeography that will be published in *Marine Ornithology*. Before the meeting, 217 people were registered. The Council voted to place the Past President as representative on each year's Local Committee, to help maintain consistency from year to year in the planning of meetings. This person will report to the Executive Council whenever matters of importance arise.

Bill Sydeman reported that travel awards were made to 12 students for this meeting, out of 31 students who applied (all of whom presented papers). Funding for this year's awards came from the U.S. Fish and Wildlife Service and the Canadian Wildlife Service.

2004 Meeting

Eduardo Palacios reported on plans for the 2004 meeting in La Paz, Baja California Sur. It can be held at the Hotel Los Arcos; other hotels are also available nearby. The Council discussed the best dates for the meeting.

The Council approved \$1125 to support travel for the chair of next year's local committee to attend the current meeting.

Other annual meeting issues

It has been unclear who has responsibility for announcing each year's meeting. The council concluded that the Chair-elect, who is in charge of the scientific program, announces the meeting and the requirements for scientific papers; information on logistics provided will be provided by local chair. The PSG Handbook should be amended to clarify this.

Criteria for awarding student travel grants were discussed. There is no set student award policy. The Council asked whether verbal and poster papers get equal weight in decisions on awards; this year all entries were judged on quality of abstracts.

The Council discussed charging nonmembers more to attend a meeting than members. Members' dues help cover the cost of processing their registration, whereas nonmembers do not contribute this support unless they pay a surcharge.

Students can attend meetings (and receive membership) for reduced fees, but they should provide a copy of their student cards in order to get these benefits. If students need additional low-cost housing (especially international students), the Student Representative should help to arrange inexpensive hotels or room-sharing.

MEMBERSHIP AND MEMBERSHIP DIRECTORY

The Treasurer believes that the Canadian bank account is convenient for members and PSG. Ken Morgan agreed to continue to manage the account and list his address on the PSG web site. PSG Membership forms should include information about the British and Canadian accounts, which allow members from those countries to pay their PSG dues in local currency.

A membership form is on the PSG web site; it will be updated. The web site will contain a link to the Treasurer's e-mail and address.

PSG should issue a new membership directory. However, the database has incorrect e-mails and addresses. The treasurer will send out a notice to members about the planned directory, asking if

SECRETARY'S REPORT

they want a password-protected website directory or whether they prefer a hard copy.

JOURNALS

PSG has been publishing two journals for several years, and the Council discussed their relative roles.

Pacific Seabirds

The editor of *Pacific Seabirds*, Vivian Mendenhall, discussed the benefits and drawbacks of publishing *Pacific Seabirds* electronically. PSG could save US\$7000 if the journal was published only on the web. A questionnaire will be mailed to members asking whether they prefer to receive it electronically or as hard copy.

Pacific Seabirds is the only archive for PSG; Executive Council minutes for some past years exist only as summaries in *Pacific Seabirds*. PSG should continue sending *Pacific Seabirds* to libraries. Although libraries do subscribe to journals electronically, they cannot do this unless all links within the web site remain exactly the same (otherwise they lose access to the journal). Mendenhall recommends that if *Pacific Seabird* is web-based, hard copies should still go to libraries. A minimum print run would cost about US\$500.

Mendenhall thinks that members like the *Pacific Seabirds* format, including scientific content and conservation news.

Marine Ornithology

The editor of *Marine Ornithology*, Tony Gaston, said that the journal's 2001 issue has been produced. The cost was US\$750. There were only 24 subscriptions for 2001, probably because subscribers had become discouraged by the length of time between publications. Tony estimated that PSG will need US\$5500 to publish a year's volume.

Alan Burger provided a review of *Marine Ornithology*. It is published jointly by the African Seabird Group and Pacific Seabird Group. Other seabird groups are also providing support, including the Australian and British groups.

The journal might benefit from a new European editor.

One journal or both?

The question is part of a larger issue—how does PSG want to provide information? Besides the two journals, we also have a web site; each meeting's abstracts are already posted on it. PSG's main mission is to improve communication, disseminate information on seabirds, and conserve seabirds. PSG needs an outlet for up-to-date information.

Options that were discussed included: (1) Do away with *Pacific Seabirds*; (2) Publish a newsletter, as hard copy or web-based; (3) Give members the option of bulletin or journal, and additional option to get both; (4) Publish once per year; (5) Move some PSG information that now appears in *Pacific Seabirds* into *Marine Ornithology*; (5) Publish *Pacific Seabirds* electronically.

Lisa suggests continuing both publications as they are for now and reconvene the discussion next year. We need to consider: (1) What should be electronic (*Pacific Seabirds* or *Marine Ornithology*)? (2) Hard copies are needed for archiving and libraries. (2) Should *Marine Ornithology* go to all members? (3) Should PSG raise membership dues to support *Marine Ornithology*?

Paying for journals

A motion was approved to submit a dues increase to the PSG membership: dues of US\$40 for regular members, US\$30 for students, and US\$1200 for life membership. *Marine Ornithology* will be part of membership package. The Publications Committee chair, Treasurer, and editor of *Marine Ornithology* will verify that the proposed dues are adequate to cover costs of the journal.

PUBLICATIONS (OTHER THAN JOURNALS)

The storage of PSG publications and handling of orders will be handled by the new Treasurer, Ron LeValley, except for *Pacific Seabirds*. Some symposia are out of print; the Publications Chair, Pat Jodice, will investigate ways to provide

these (possibly electronically, as PDF files).

ELECTIONS

Pat Baird said that members who have moved cannot figure out which regional representative they should vote for. It was decided that members should vote where they reside. A suggestion was made to send ballots out by e-mail; Pat will investigate e-mail options.

COMMITTEE REPORTS

During discussion of each committee's report, the Executive Council reviewed the mandate of the committee, and the Chair restated the mandate.

Conservation Committee.

The Conservation Chair was absent, but a Conservation Report was published in *Pacific Seabirds*.

Xantus's Murrelet Committee

No report was received, but Ballance reviewed the committee's activities. PSG has submitted a petition to list the Xantus's Murrelet. California Fish and Game accepted the petition for listing in California, which puts into immediate effect some regulations to prohibit take. The petition was accepted by the federal government; it is under review but has not been acted on yet.

The committee was directed to provide a written report. Its mandate for 2004 is to monitor the petition for federal listing.

Seabird Monitoring Committee

Scott Hatch reported that contracts have been issued to two firms for data coding and entry online. Problems with data entry appear to be solved. Software and servers are now available at USFWS, and their Migratory Bird Management office in Anchorage is willing to support the database.

There were questions about the absence of invoices for data entry from the Treasurer's Report. Scott explained the issues with sub-contractors; he wants to keep funds available to pay them. If the contractors do not provide invoices by

SECRETARY'S REPORT

January 2004, then the Executive Council will redirect the money.

In the future, the committee may turn to using the data for investigation of trends in seabird species of concern. The committee's mandate for 2004 is to work on the final implementation of Pacific Seabird monitoring database, determine how to spend its funds from PSG, and transition into a review of data in database.

Japan Seabird Conservation Committee

Kim Nelson read a report for committee chairs John Fries and Koji Ono. She added that Professor Ogi will retire in March 2003.

The committee's mandate for 2004 is to provide the link between PSG and the Japanese seabird research community.

Marbled Murrelet Technical Committee

Anne Harfenist reported that the committee has finished the Inland Survey Protocol. The Executive Council approved the protocol, which will be dated early January 2003. The protocol will be published by PSG, with a cover that gives the PSG Technical Report number, and in a PDF version on the PSG website.

Some representatives of the timber industry have expressed concern to government agencies that their sector did not have sufficient opportunity for input. The committee coordinator has not received any direct complaints. A letter from the committee will be sent to researchers to clarify when tree climbing should be used or not used.

The Committee Chair does not foresee any issues in the coming year. The committee's mandate for 2004 is to continue providing technical advice.

Ornithological Council

Ellen Paul sent a copy of the Ornithological Council report to all committee members.

Lifetime Achievement Award

The Council approved the Lifetime Achievement Award for Robert Ricklefs.

20 February 2003

Present were Lisa Balance, Ken Morgan, Stephanie Zador, Meredith Elliott, Beth Flint, Verena Gill, David Irons, Louise Blight, Vivian Mendenhall, Bill Sydeman, Lora Leschner, and Katie O'Reilly; also Ron LeValley (Treasurer-elect), Dan Roby (Chair-elect), and Pat Jodice (Publications Chair).

MEETINGS

2003 Meeting

Ron Ydenberg provided a report from the Local Committee. There are 221 registrants, 15 walk-in registrants. He expects 5 to 15% above normal registration numbers. Early registration fees were \$200 (students \$100); late fees were \$240 (\$125 for students). There are 100 papers, 40 posters, and 30 papers by students. The time for the papers is short, but speakers and session chairs are keeping the meeting on time.

Future meetings

The 2004 meeting will be in January in La Paz, Baja California Sur.

Pat Baird said that Colonial Waterbirds would like to have another joint meeting with PSG. The Council decided to make the 2005 meeting into a joint meeting, and to hold it between November 2004 and January 2005. They discussed possible sites in Oregon, Arcata (California), or perhaps on a cruise to Alaska. [Note, January 2004: Oregon has been selected.]

Ballance suggested that PSG might want to coordinate its 2006 meeting with North American Ornithological Conference. The organizers of the North American are discussing the idea of convening a meeting of all water bird groups. Others suggested that the 2006 meeting be somewhere in California.

Japan or China were put forward as ideas for the 2007 meeting; San Diego was suggested for 2008.

COMMITTEE REPORTS

Publications Committee

Pat Jodice (Publications Chair) is investigating professional printers and options for *Marine Ornithology*. Pat investigated Ornithological Society of North America (OSNA) membership, and the Allen Press and the option of "Bio 1 electronic publication." The benefits of OSNA membership include increased visibility, a database that can be queried, payment of dues with credit card and online, distribution of back issues, and possibly increased membership. The Chair asked the publications committee to continue to review membership in OSNA.

A committee that investigated OSNA membership in the past included Kim Nelson and Craig Harrison; their input will be needed too.

BUSINESS MATTERS

As a nonprofit corporation, PSG's documentation with the state of California requires the name of an individual as "special agent of process." The Council voted to designate Craig Harrison (with his assent) to be named.

The proposed budget for 2003-2004 was adopted by the Council.

The Council discussed whether to change PSG's logo. It is used on both Pacific Seabirds and *Marine Ornithology*. If the logo is reduced in size (as in *Marine Ornithology*), details may become obscure. Some thought we might need to get a smaller logo or have a new design; others favored using a portion of the traditional logo.

The Endowment Fund has lost value due to the stock market slump. The Council agreed that PSG should leave the principal in the fund and wait for interest rates to recover. The fund's Trustees will tell PSG when funds are available again to expend. The Endowment Fund is to be used for publications.

PUBLISHED PROCEEDINGS OF SYMPOSIA OF THE PACIFIC SEABIRD GROUP

The Pacific Seabird Group holds occasional symposia at its annual meetings. Published symposia are listed below. They are available for purchase (unless out of print). To order, see the membership application/publication order form.

SHOREBIRDS IN MARINE ENVIRONMENTS. Frank A. Pitelka (Editor). Proceedings of an International Symposium of the Pacific Seabird Group, Asilomar, California, January 1977. Published June 1979 in *Studies in Avian Biology*, Number 2. Out of print.

TROPICAL SEABIRD BIOLOGY. Ralph W. Schreiber (Editor). Proceedings of an International Symposium of the Pacific Seabird Group, Honolulu, Hawaii, December 1982. Published February 1984 in *Studies in Avian Biology*, Number 8. Out of print.

MARINE BIRDS: THEIR FEEDING ECOLOGY AND COMMERCIAL FISHERIES RELATIONSHIPS. David N. Nettleship, Gerald A. Sanger, and Paul F. Springer (Editors). Proceedings of an International Symposium of the Pacific Seabird Group, Seattle, Washington, January 1982. Published 1984 as Canadian Wildlife Service, Special Publication. Out of print.

THE USE OF NATURAL VS. MAN-MODIFIED WETLANDS BY SHOREBIRDS AND WATERBIRDS. R. Michael Erwin, Malcolm C. Coulter, and Howard L. Cogswell (Editors). Proceedings of an International Symposium at the first joint meeting of the Colonial Waterbird Society and the Pacific Seabird Group, San Francisco, California, December 1985. *Colonial Waterbirds* 9(2), 1986. \$12.00 from Ornithological Societies of North America, PO Box 1897, Lawrence, Kansas 66044; phone (800) 627-0629.

ECOLOGY AND BEHAVIOR OF GULLS. Judith L. Hand, William E. Southern, and Kees Vermeer (Editors). Proceedings of an International Symposium of the Colonial Waterbird Society and the Pacific Seabird Group, San Francisco, California, December 1985. Published June 1987 in *Studies in Avian Biology*, Number 10. \$18.50.

AUKS AT SEA. Spencer G. Sealy (Editor). Proceedings of an International Symposium of the Pacific Seabird Group, Pacific Grove, California, December 1987. Published December 1990 in *Studies in Avian Biology*, Number 14. \$16.00.

STATUS AND CONSERVATION OF THE MARBLED MURRELET IN NORTH AMERICA. Harry C. Carter, and Michael L. Morrison (Editors). Proceedings of a Symposium of the Pacific Seabird Group, Pacific Grove, California, December 1987. Published October 1992 in *Proceedings of the Western Foundation of Vertebrate Zoology*, Volume 5, Number 1. \$20.00.

THE STATUS, ECOLOGY, AND CONSERVATION OF MARINE BIRDS OF THE NORTH PACIFIC. Kees Vermeer, Kenneth T. Briggs, Ken H. Morgan, and Douglas Siegel-Causey (editors). Proceedings of a Symposium of the Pacific Seabird Group, Canadian Wildlife Service, and the British Columbia Ministry of Environment, Lands and Parks, Victoria, British Columbia, February 1990. Published 1993 as a Canadian Wildlife Service Special Publication, Catalog Number CW66-124-1993E. *Free of charge from:* Publications Division, Canadian Wildlife Service, Ottawa, Ontario, K1A 0H3, Canada.

BIOLOGY OF MARBLED MURRELETS—INLAND AND AT SEA. S. Kim Nelson and Spencer G. Sealy (Editors). Proceedings of a Symposium of the Pacific Seabird Group, Seattle, Washington, February 1993. Published 1995 in *Northwestern Naturalist*, Volume 76, Number 1. \$12.00.

BEHAVIOUR AND ECOLOGY OF THE SEA DUCKS. Ian Goudie, Margaret R. Peterseen and Gregory J. Robertson (editors). Proceedings of the Pacific Seabird Group Symposium, Victoria, British Columbia, 8-12 November 1995. A special publication compiled by the Canadian Wildlife Service for the Pacific Seabird Group. Published 1999 as Canadian Wildlife Service Occasional Paper number 100, catalog number CW69-1/100E. *Free of charge from:* Publications Division, Canadian Wildlife Service, Ottawa, Ontario, K1A 0H3, Canada.

SEABIRD BYCATCH: TRENDS, ROADBLOCKS AND SOLUTIONS. Edward F. Melvin and Julia K. Parrish (editors). Proceedings of an International Symposium of the Pacific Seabird Group, Blaine, Washington, 26-27 February 1999. Published 2001 by University of Alaska Sea Grant, Fairbanks, Alaska. Publication no. AK-SG-01-01. \$40.00 from the publisher.

BIOLOGY, STATUS, AND CONSERVATION OF JAPANESE SEABIRDS. Nariko Oka (editor). Proceedings of an International Symposium of the Japanese Seabird Group and Pacific Seabird Group, Lihue, Hawaii, February 2001. *Journal of the Yamashina Institute of Ornithology* 33(2); Symposium (5 papers), pp 57-147, other papers pp. 148-213. In English with Japanese abstracts. \$75.00.

Information on presenting symposia: Pacific Seabird Group Symposia are initiated by any PSG member with interest in a particular topic. The goal is to present a collection of papers that explore and review this topic, usually at an annual meeting of the Pacific Seabird Group. In some cases the papers are then edited and published as a PSG Symposium. Anyone interested in organizing a symposium must first contact both the Coordinator of the Publications Committee and the Scientific Program Chair for an annual meeting. Guidelines will be provided on obtaining approval and on organizing, presenting, and publishing a PSG Symposium, including the responsibilities involved.

PACIFIC SEABIRD GROUP COMMITTEE

COORDINATORS

Committees do much of PSG's business, as well as the conservation work for which PSG is respected. The committees welcome (and need) participants; contact the coordinators for information.

CONSERVATION COMMITTEE

Craig S. Harrison, 4953 Sonoma Mountain Road, Santa Rosa, CA 95404, USA. Telephone: (202) 778-2240, e-mail: charrison@erols.com

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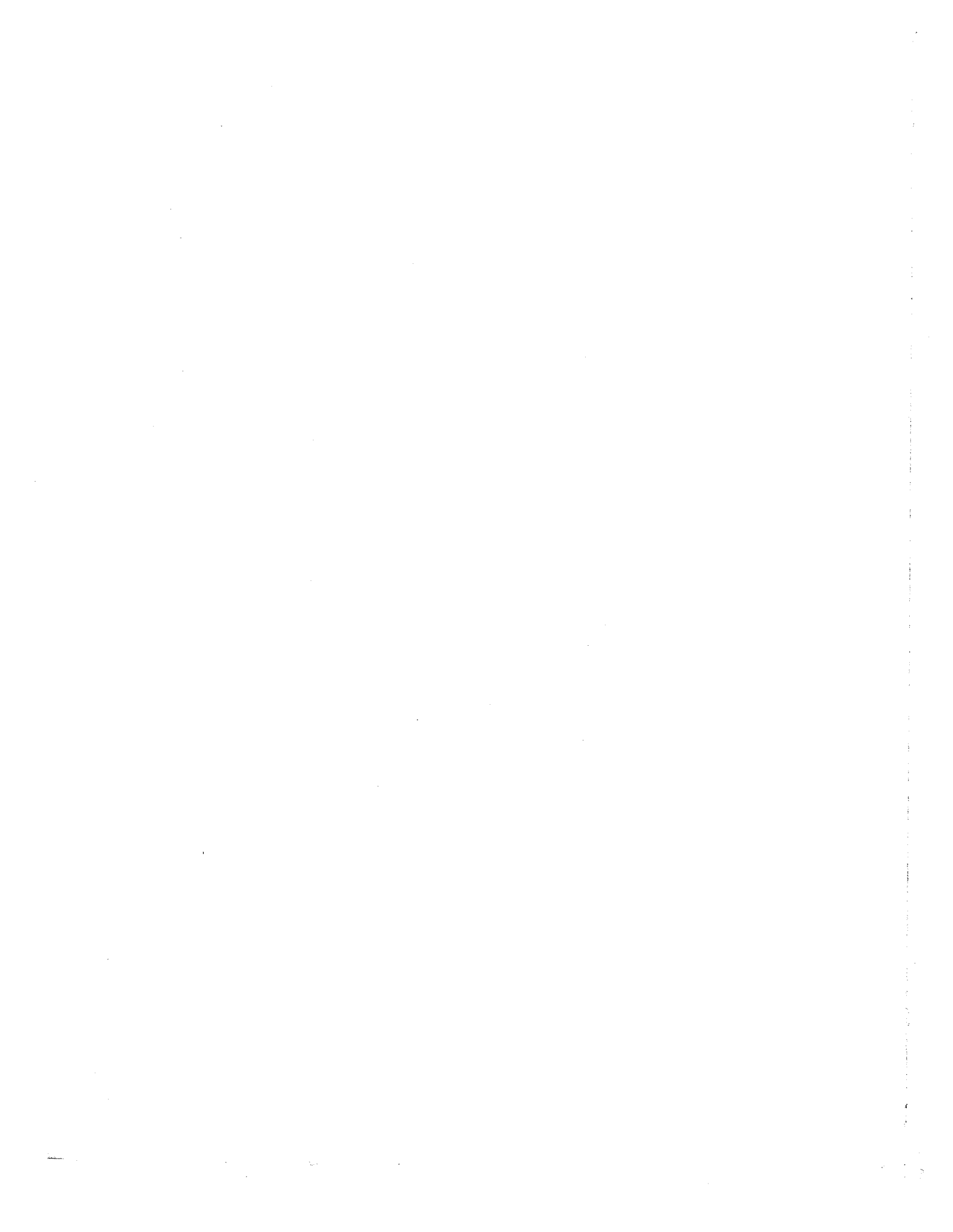
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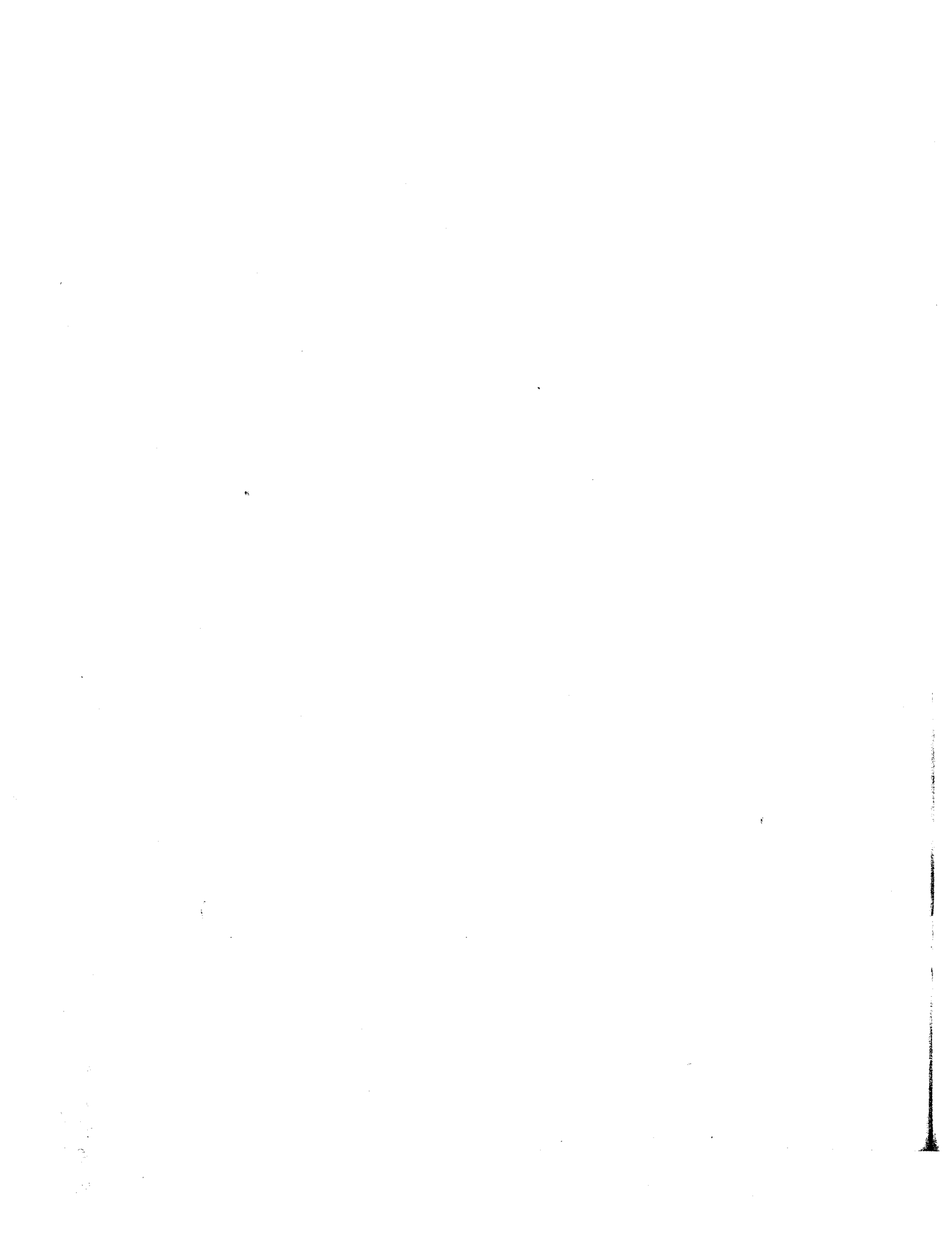
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